Activity

1
Sequences
a) The first term of a sequence is 80. Each following term is 40 more than the previous term. Continue the sequence.
Ps: 80, 120, 160, 200, 240, . . .
b) The first term is 200 and the sequence is decreasing by 20.
(Ps: 200, 180, 160, 140, 120, 100, 80, 60, . . ., 0, –20, –40, . . .)
Show each sequence on a number line (with 'ticks' at every 10).

5 min

2
What is the rule?
a) Study this diagram. BB:
Think about what the rule could be.
Ps come out one at a time to fill in a number.
Class points out errors.
Who can tell us the rule?
(increasing by 10) Who agrees?
b) i) Let's write the biggest number in the place-value table.
Elicit that 200 = 2 hundreds, 0 tens and 0 units
ii) Let's write 1 tenth of 200 in the table.
Elicit that 20 = 2 tens and 0 units
iii) Let's write the number which is 6 times 20 in the table.
Elicit that 120 = 1 hundred, 2 tens and 0 units (= 12 tens)

11 min

3 PbY3a, page 31
Q.1 Read: Count the amount in the box and write the number in the place-value table.
What do the letters H, T and U stand for? (Hundreds, Tens, Units)
Review at BB with whole class. P comes to BB to fill in number and explain reasoning. Who agrees? Who thinks something else?
BB: 10 × 10 units = 10 tens = 1 hundred
4 × 10 units = 4 tens
1 × 100 + 4 × 10 + 7 × 1 = 100 + 40 + 7 = 147
Let’s read the number in the table: ‘1 hundred and forty seven’

15 min

4 Writing numbers 1
a) Which numbers are shown here? Let’s write them as digits in the place-value table.
BB:
Ps come out to count the hundreds, tens, units and write in table.
Who agrees? Who thinks something else? Let’s read the numbers.

Lesson Plan

31

Notes
Whole class activity
(Over 200 is voluntary)
In unison
In unison. (T notes how far Ps can count)
Praising, encouragement only

Whole class activity
Drawn on BB or use enlarged copy master or OHP
At a good pace
Agreement, praising
Reasoning, agreement, praising

Individual work, monitored, helped
Use enlarged copy master or OHP (or piles of model coins)
Discussion, agreement, self-correcting, praising
In unison

Whole class activity
Drawn on BB or use enlarged copy master or OHP
Reasoning, agreement, praising
Ps also write both numbers as words and digits in Ex. Bks.
## Lesson Plan 31

### Activity

**Lesson Plan 31**

#### Week 7

**Y3**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Where would the numbers be on this number line? | **Notes**

Ps come out to mark the numbers with a dot and label them.

b) T dictates other numbers (e.g. 135, 153, 126, 162) and Ps write them as digits in their *Ex. Bks*.

Review with whole class. Mistakes corrected. Show on number line. |

---

<table>
<thead>
<tr>
<th>Writing numbers 2</th>
<th><strong>Notes</strong></th>
</tr>
</thead>
</table>
| T has SB or BB already prepared. Let’s write these numbers as digits. | **Notes**

BB:  

- a) 1 hundred + 4 tens + 6 units (146)
- b) 1 hundred + 37 units (137)
- c) 10 tens + 38 units (= 100 + 38) (138)
- d) 3 tens + 1 hundred (= 30 + 100) (130)
- e) 3 tens + 18 units (= 30 + 18) (48)

Ps come out to BB to write number, explaining reasoning.

T continues dictating similar questions. Ps write numbers in *Ex. Bks*.

Review with whole class. Mistakes corrected. |

---

<table>
<thead>
<tr>
<th>Writing numbers 2</th>
<th><strong>Notes</strong></th>
</tr>
</thead>
</table>
| Q.2 a) Read: Write the numbers as digits. | **Notes**

T elicits that question numbers are written in the Roman way and that there are 7 parts to the question, i.e. 7 numbers to write as digits.

Review at BB with whole class. Mistakes corrected. |

---

<table>
<thead>
<tr>
<th>Writing numbers 2</th>
<th><strong>Notes</strong></th>
</tr>
</thead>
</table>
| Q.3 Read: Fill in the missing numbers. Join up the given numbers to the number line. | **Notes**

What is the range of each segment of the number line?  
(a) from 50 to 110  
(b) from 150 to 210

Review at BB with whole class. Ps come out to fill in missing numbers and join to number line. Mistakes corrected.

Let’s read out the numbers in the boxes in increasing order. |

---

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Lesson Plan 31

**Notes**

Whole class activity

Drawn on BB or use enlarged copy master or OHP

**Bold** numbers are given

At speed.

Agreement, praising

Class responds in unison

---

**Y3**

<table>
<thead>
<tr>
<th>Activity</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number table</strong></td>
<td></td>
</tr>
<tr>
<td>Let's help <em>Tommy Turtle</em> complete his number table.</td>
<td></td>
</tr>
<tr>
<td>BB:</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Number Table" /></td>
<td></td>
</tr>
<tr>
<td>Ps come out one after the other to fill in a number and say it to class.</td>
<td></td>
</tr>
<tr>
<td>Class points out errors. Elicit that numbers in a column increase by 10.</td>
<td></td>
</tr>
<tr>
<td>Which number has <em>Tommy Turtle</em> eaten? (151)</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Activity</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PbY3a, page 31</strong></td>
<td></td>
</tr>
<tr>
<td>T first talks about long car journeys and that the distances covered are usually measured in miles (British standard unit) and not km, in cars and on signposts.</td>
<td></td>
</tr>
<tr>
<td>Explain or elicit that a milometer is a gadget in a car which counts every mile the car has travelled.</td>
<td></td>
</tr>
<tr>
<td>Q.4</td>
<td>a) Read: <em>What will the milometer show when we have gone another mile?</em></td>
</tr>
<tr>
<td>These are milometers on different cars. What does the zero show? (no thousands)</td>
<td></td>
</tr>
<tr>
<td>Let's read the numbers together. What do we have to do to these numbers? (Add on 1 more mile)</td>
<td></td>
</tr>
<tr>
<td>Review at BB with whole class. T writes what Ps dictate. Mistakes corrected. Let's read the new numbers.</td>
<td></td>
</tr>
<tr>
<td>BB:</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Milometer Numbers" /></td>
<td></td>
</tr>
<tr>
<td>b) Read: <em>What did the milometer show 1 mile ago?</em></td>
<td></td>
</tr>
<tr>
<td>This time we have to imagine what number would have been shown on the milometer when we were 1 mile back along the road. What do we have to do to these numbers? (Take off 1 mile)</td>
<td></td>
</tr>
<tr>
<td>Review at BB with whole class. T writes what Ps dictate. Mistakes corrected. Let's read the new numbers together.</td>
<td></td>
</tr>
<tr>
<td>BB:</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Milometer Numbers" /></td>
<td></td>
</tr>
</tbody>
</table>

---

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Lesson Plan

### Activity

#### 1 Number table

Study this table.

- How many numbers does it show? (201: numbers 0 to 200)
- How many numbers:
  - a) have 1 digit
  - b) have 2 digits
  - c) have 3 digits
  - d) are whole tens
  - e) do not have 2 digits
  - f) have only odd digits
  - g) do not have 3 digits
  - h) have 2 as the units digit
  - i) have 2 as the tens digit
  - j) have 2 as the hundreds digit
  - k) have digits which add up to 6?

Ps come to BB or OHP to show/count.

#### 2 Sequences

a) The first term of a sequence is 100. Each following term is 4 more than the previous term.

Write the first 10 terms of the sequence in your Ex. Bks.

Review with whole class. Mistakes corrected.


b) What can the rule of this sequence be? Write these 3 terms in the centre of the line: 156, 150, 144, then write the 4 terms before them and the 4 terms after them.

Review with whole class. Mistakes corrected.

- (180, 174, 168, 162, 156, 150, 144, 138, 132, 126, 120)

What is the rule? (decreasing by 6)

#### 3 Writing numbers

Which numbers are shown in the diagrams? Write the numbers as digits and in words in your Ex. Bks.

BB: a) b) c) d) e)

Review at BB with whole class. Mistakes corrected.

- a) 132 = One hundred and thirty two
- b) 201 = Two hundred and one
- c) 142 = One hundred and forty two
- d) 125 = One hundred and twenty five
- e) 113 = One hundred and thirteen

### Notes

- Whole class activity
- Table drawn on BB or use enlarged copy master or OHP

**Solution:**

- a) 10
- b) 90
- c) 101
- d) 20
- e) $10 + 101 = 111$
- f) $11 \times 5 = 55$
- g) $10 + 90 = 100$
- h) 20
- i) $10 + 10 = 20$
- j) 1
- k) 13

Agreement, praising
## Y3

### Activity

**PbY3a, page 32**

Q.1 Read: Write additions or subtractions about the pictures.

T explains task. Elicit that parts a), b), d) and e) are additions, and parts c) and f) are subtractions.

Do part a) on BB with whole class if necessary.

Review at BB with whole class. Mistakes corrected.

**Solution:**

- a) 14 + 3 = 17
- b) 7 + 5 = 12
- c) 12 – 7 = 5
- d) 140 + 30 = 170
- e) 70 + 50 = 120
- f) 120 – 70 = 50

Who notices a connection between the rows? (Amounts in 2nd row are 10 times those in first row.)

Look at the addition in part a): 14 + 3 = 17. How many numbers have been added? (2) We call this a 2-term addition.

Who can give me an example of a 3-term addition? (e.g. 1 + 2 + 3 = 6) Does the order of the numbers being added matter? (No, because 14 + 3 = 3 + 14 = 17, so the sum is the same)

Is there another operation where the terms can be changed around? (Multiplication, because if the order of terms is changed, the product stays the same: e.g. 1 × 2 × 3 = 3 × 1 × 2 = 6)

Does the order matter in a subtraction (division)? (Yes, if the order is changed, the difference (quotient) is different.)

---

### Extension

**PbY3a, page 32, Q.2**

Read: Write operations about the jumps along the number lines.

Deal with one part at a time. Ps come to BB to write start and end numbers of jumps below number line, then to write write additions or subtractions about them. Who agrees? Who thinks something else?

Elicit that in parts c) and d), the jumps are also shown in two easy stages: first to the nearest 100, then to the number required.

**Solution:**

- a) 120 + 30 = 150
- b) 180 – 50 = 130
- c) 60 + 80 = 140
- d) 150 – 70 = 80
- e) 90 + 80 = 140
- f) 150 – 50 – 20 = 80

---

### Addition/subtraction practice

Write only the answers to these operations in your Ex. Bks.

**BB:**

- a) 120 + 40 = 160
- b) 200 – 70 = 130
- c) 190 – 110 = 80

- d) 80 + 110 = 190
- e) 90 + 80 – 20 = 150
- f) 30 + 120 + 30 = 180

Deal with one part at a time. Review with whole class. Ps explain how they did the calculations. Who did it another way? etc.

**Notes**

- Individual work, monitored, helped
- Drawn on BB or use enlarged copy master or OHP
- Differentiation by time limit
- Reasoning, agreement, self-correction, praising

Praising if Ps notice

Whole class discussion on order of terms in the four operations

Examples shown on BB

Encourage Ps to use the words: operation, term, sum, difference, product, quotient

e.g. 4 ÷ 2 = \(\frac{1}{2}\), 2 ÷ 4 = \(\frac{1}{2}\), 4 ÷ 2 = \(\frac{1}{2}\), 2 ÷ 4 = \(\frac{1}{2}\)

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**Y3**

### Activity

#### 7

**PbY3a, page 32**

Q.3 Read: *Practise calculation.*

Elicit that there are 6 additions and 6 subtractions. \((6 + 6 = 12)\)

Let's see how many of them you can do in 3 minutes!

Start . . . now! . . . Stop!

Review at BB with whole class. Mistakes corrected.

Who had 12 correct? Who made a mistake? What kind of mistake? etc.

**BB:**

- \(3 + 4 = 7\)
- \(13 + 4 = 17\)
- \(3 + 14 = 17\)
- \(30 + 40 = 70\)
- \(130 + 40 = 170\)
- \(30 + 140 = 170\)

- \(7 - 5 = 2\)
- \(17 - 5 = 12\)
- \(17 - 15 = 2\)
- \(70 - 50 = 20\)
- \(170 - 50 = 120\)
- \(170 - 150 = 20\)

Did anyone notice anything about the additions (subtractions)? Ps point out similarities and connections.

---

#### 8

**PbY3a, page 32**

Q.4 Read: *Roberta keeps some of her money in a piggy bank and some of it in a purse.*

*How much does Roberta have altogether? Complete the table.*

T could have Roberta's 'real' purse and piggy bank (containing money to match one of the columns in table, e.g. 30 p in piggy bank and £1.70 in purse) to show to class.

Complete the table to show what Roberta's money might be.

Review at the BB with whole class. Ps come out to fill in a column and explain reasoning. Mistakes corrected.

**BB:**

<table>
<thead>
<tr>
<th>Pence in piggy bank</th>
<th>80</th>
<th>180</th>
<th>30</th>
<th>120</th>
<th>50</th>
<th>60</th>
<th>30</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pence in purse</td>
<td>20</td>
<td>20</td>
<td>170</td>
<td>40</td>
<td>130</td>
<td>40</td>
<td>130</td>
<td>110</td>
</tr>
<tr>
<td>Pence in total</td>
<td>100</td>
<td>200</td>
<td>200</td>
<td>160</td>
<td>180</td>
<td>100</td>
<td>160</td>
<td>190</td>
</tr>
</tbody>
</table>

**X**, come and see what money is actually in the purse and piggy bank and show us the matching column in the table.

Let's check that X is correct.

Let's compare the rows in the table. Who can write an equation about them? Who agrees? Who can write it in a different way? etc.

---

### Notes

- **Lesson Plan 32**
- Individual work, monitored
- Keep to time limit
- Agreement, self-correction, evaluation, praising
- Feedback for T
- Individual work, monitored
- Differentiation by time limit
- Keep money hidden until end of lesson!
- Table drawn on BB or use enlarged copy master or OHP
- Reasoning, agreement, self-correction, praising
- BB: £1 = 100 p
  
  \[100\text{ p} + 70\text{ p} + 30\text{ p} = 200\text{ p} = £2\]
  
  e.g. Let \(Pi = \text{Piggy bank, Pu = Purse and } T = \text{Total}\)
  
  BB: \(Pi + Pu = T\)
  
  \(Pi = T – Pu\)
  
  \(Pu = T – Pi\)

  Praising
Y3

Lesson Plan

33

Notes

Whole class activity
Encourage Ps to ask logical questions and keep in mind clues already given.
Encourage different types of questions
Praise creativity

Activity

1 Secret number
I am thinking of a number. You must find out what it is by asking me questions but I can answer only 'yes' or 'no'.

e.g. 120: Is it 2-digit? (No) Is it 3-digit? (Yes) Is it even? (Yes) Is it less than 150? (Yes) Is it more than 120? (No) Does it have zero as the units digit? (Yes) Are its hundred and tens digits the same? (No) It is 120. (Yes)

If Ps deduce it quickly, repeat for another number. (Ps’ choice)

3 min

2 Sequence competition
I will describe a sequence and then give you 1 minute to write as many terms as you can in your Ex Bks. (Heading: Lesson number and date)

The first term is 200 and it decreases by 8. Start... now! ... Stop!

Everyone stand up. Ps list the terms in order round class.

Ps who made a mistake, or did not have time to write that term, sit down.

Let's give the winner(s) a big round of applause!

8 min

3 Making additions
Let's see how clever you are!

BB:

Let's do it in a logical order. How should we do it? (e.g. start at 20 and work clockwise)

T writes first addition on BB and crosses off the 20. P 1 comes to BB to write next addition, explaining calculation, and crosses off ‘40’, then chooses P 2 to write the next addition, and so on. Class points out errors.

How many additions have we made? (8: one for each outer number)

12 min

4 Place value
Study the diagram. What do you think we have to do? (Write the digits for each number in the correct column: Hundreds, Tens or Units)

BB:

Ps come to BB to choose a row and write in the missing digits, explaining reasoning.

Tell us the number you have written. Can you write it in words?

16 min

5 Sorting letters
Let’s help the postman deliver the letters to the correct houses.

Ps come to BB to join up matching values. Class agrees/disagrees

20 min
Lesson Plan 33

Notes
Whole class activity to start
T has purse already prepared
Use enlarged copy master or OHP
Reasoning, agreement, praising
BB:

b) C: \(50 + 4 \times 10 + 2 = 92\)
D: \(100 + 1 = 101\)
\(101 > 92\)

\(101 - 92 = 9\)

c) E: \(100 + 50 + 5 + 1 = 156\)
F: \(100 + 3 \times 10 + 20 + 5 + 1 = 156\)
\(156 = 156\)
\(156 - 156 = 0\)

Whole class activity
Drawn and written on SB or BB or use enlarged copy master or OHP
At a good pace
With T’s help if necessary
Elicit that the terms of an addition are inter-changeable
T encourages use of the words: terms, sum, difference

Elicit that the terms of a subtraction are not inter-changeable.
\((120 - 70 \neq 70 - 120)\)
or \(70 \nRightarrow 50\)

\(50 + 20 = 70\) or \(50 < 20\ 70\)
Reasoning, agreement, praising

Individual work, monitored
Keep to time limit
Agreement, self-correction, evaluation, praising
Feedback for T
Whole class discussion
Agreement, praising

pbY3a, page 33

Q.1
Read: Who has more money? How much more?

a) T chooses two Ps to be Anne and Brian. Each P explains their equation to class, says how much money they have, then chooses the correct coins from a purse. (Elicit that 100 p = £1)
Which of you has more? A explains the inequality. How much more? B explains the subtraction.

b) T chooses two other Ps to be Colin and Diana. Ps write their equations and choose appropriate coins from the purse.
Then the P who has more writes the matching inequality and the P who has less writes the subtraction. Class agrees or disagrees.

c) Done as individual work, reviewed with whole class. Two Ps come out to choose appropriate coins from the purse.
(Or repeat with two other Ps at front of class as above.)

Open sentences

Look at these pictures. I have written some sentences about them.

BB:

a) There is \(50\ p\) in the piggy bank and \(70\ p\) in the purse.
Altogether there is \(120\ p\). \([50 + 70 = 120, \text{ or } 70 + 50 = 120]\)

b) There was \(120\ p\) in the piggy bank. We took out \(70\ p\)
and \(50\ p\) is left. \([120 - 70 = 50]\)

c) We had \(120\ p\) in the purse. We spent \(50\ p\) and \(70\ p\) is left. \([120 - 50 = 70]\)

d) There is \(20\ p\) less in the piggy bank than in the purse. \([70 - 50 = 20]\)

e) There is \(20\ p\) more in the purse than in the piggy bank.

Ps come out to fill in the missing items, read the sentence and then write it in a mathematical way. Class agrees/disagrees.

PbY3a, page 33

Q.2
Read: Practise calculation.

Elicit that there are \(6 \times 3 = 18\) calculations. Let’s see how many you can do in 4 minutes! Start . . . now! . . . Stop!
Review orally round class. Ps change pencils. Mistakes corrected.
Who had 18 (17, 16, 15, less than 10) correct? What were your mistakes? Who does not know what they did wrong? etc.
Did anyone notice anything about the additions/subtractions)? Ps (or T if no P notices) point out similarities and connections.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Lesson Plan 33</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y3</strong></td>
<td></td>
</tr>
<tr>
<td><strong>9</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PbY3a, page 33</strong></td>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td>Q.3 Read: Anne has £80 and Bob has £60. Read the questions and do the calculations in your Pbs. Underline the answer. Review orally with whole class (or Ps show results with number cards on command). Mistakes corrected.</td>
<td>Inidividual work, monitored, helped</td>
</tr>
<tr>
<td>a) How much money do they have altogether?</td>
<td>Agreement, self-correction, praising. Feedback for T. BB:</td>
</tr>
<tr>
<td>b) How much money will they have altogether if:</td>
<td>a) £80 + £60 = £140</td>
</tr>
<tr>
<td>i) Anne is given an extra £10?</td>
<td>ii) £140 + £10 = £150</td>
</tr>
<tr>
<td>ii) Bob spends £20?</td>
<td>iii) £140 – £20 = £120</td>
</tr>
<tr>
<td>iii) they each spend £40?</td>
<td>iv) £140 – £40 – £40 = £60</td>
</tr>
<tr>
<td>iv) Anne spends £50 and Bob is given an extra £90?</td>
<td>£140 + £90 – £50 = £180</td>
</tr>
<tr>
<td><strong>41 min</strong></td>
<td></td>
</tr>
<tr>
<td><strong>10</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PbY3a, page 33, Q.4</strong></td>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td>Read: The 3 numbers along each line add up to 200. Write in the missing numbers.</td>
<td>Whole class activity</td>
</tr>
<tr>
<td>Deal with one puzzle at a time.</td>
<td>(Individual work if Ps wish)</td>
</tr>
<tr>
<td>a) Which are the possible numbers? BB: 40, 50, 60, 70, 80, 90</td>
<td>Drawn on BB or use enlarged copy master or OHP</td>
</tr>
<tr>
<td>What should we do first? (Try them in 3s) e.g.</td>
<td>Encourage logical approach</td>
</tr>
<tr>
<td>• 40 + 50 (60) not possible, as 110 (100) needed to make 200 40 + 70 + 90 = 200;</td>
<td>Discussion, agreement, praising</td>
</tr>
<tr>
<td>• 50 + 60 + 90 = 200; 50 + 70 + 80 = 200;</td>
<td>Solutions: a)</td>
</tr>
<tr>
<td>• 60 + 70 (80) not possible as number needed has already been used.</td>
<td>b)</td>
</tr>
<tr>
<td>We now know the three additions but where do we put them? Elicit that order of terms in additions can be change around and that a term common to two additions should be in a corner, i.e. corner numbers are 90, 70 and 50. Other numbers can now be inserted.</td>
<td></td>
</tr>
<tr>
<td>b) Done in a similar way but 4 additions needed. (Or done as homework if Ps wish, or completed in Lesson 35)</td>
<td></td>
</tr>
<tr>
<td><strong>45 min</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Activity

#### 1 What is the rule?

Who can fill in one of the numbers missing from this table?

<table>
<thead>
<tr>
<th></th>
<th>110</th>
<th>50</th>
<th>70</th>
<th>155</th>
<th>200</th>
<th>140</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>130</td>
<td>15</td>
<td>80</td>
<td>30</td>
<td>45</td>
<td>60</td>
<td>190</td>
</tr>
</tbody>
</table>

\[ \text{\textbullet} + \text{\cell} = 200; \quad \text{\cell} = 200 - \text{\cell}; \quad \text{\cell} = 200 - \text{\textbullet} \]

Ps come out to BB one after the other to complete a column, explaining reasoning. Class agrees/disagrees.

Who can write the rule? Who agrees? Who can write it another way?

---

#### 2 Problem 1

Listen carefully to this problem. I will read it twice. When I read it the second time, write down the data in your Ex. Bks.

Make a plan, do the calculations, check them and write your answer.

A bar of toffee costs 70 p and an ice-cream costs 40 p more.

*How much does the ice-cream cost?*

*How much do the two things cost altogether?*

Review at BB with whole class. A, come and explain to us what you wrote. Who agrees? Who did it another way?

**Plan:**
- Toffee bar: 70 p
- Ice-cream: 70 p + 40 p

**Calculations:**
- \(70 + 40 = 110\)
- \(110 = £1.10\)
- \(70 + 110 = 180\)
- \(180 = £1.80\)

---

#### 3 Problem 2

Listen very carefully to the problem this time! I will read it twice. When I read it the second time, write down the data in your Ex. Bks.

Make a plan, do the calculations, check them and write your answer.

A tulip costs 70 p, 40 p more than a bunch of snowdrops.

*How much is a bunch of snowdrops?*

*How much does a tulip and a bunch of snowdrops cost altogether?*

Review at BB with whole class. B, come and explain to us what you wrote. Who agrees? Who did it another way?

**Plan:**
- Tulip: 70 p
- Snowdrops: 70 p – 40 p

**Calculations:**
- \(70 – 40 = 30\)
- \(30 = 30 p\)
- \(70 + 30 = 100\)
- Altogether they cost £1. (100 p = £1)

---
Lesson Plan 34

Whole class activity
T has SB or BB or OHP already prepared

Ps come to BB to write the sums and differences, then to list in increasing order.

Discussion, agreement, praising
If no P notices, T gives hints or points out connections

As above

Consolidate orally with other examples, e.g.
If 130 + 50 = 180, 120 + 60 = ?
If 130 + 50 = 180, 130 + 60 = ?
If 130 – 50 = 80, 140 – 50 = ?
If 130 – 50 = 80, 130 – 60 = ?

Boom!
Let's play Boom! Everyone stand up!
Let's start at 98 and say 'boom' instead of every number which is divisible by 5.
Continue until only one P is left standing.

Whole class activity
If Ps make a mistake they sit down and next P answers correctly.
At speed round class
In good humour!
Class applauds the winner.

How many lettuces are in the gardens?
Write additions and and multiplications about the pictures.
Deal with one part at a time. Review at BB with whole class.
Ps dictate operations to T or come out to write on BB:

\[ \begin{align*}
5 + 5 + 5 + 5 + 5 & = 25; \quad 5 \times 5 = \mathbf{25} \text{ (only two are possible)} \\
10 + 10 + 10 + 10 + 10 & = 50; \quad 10 \times 5 = 5 \times 10 = \mathbf{50}
\end{align*} \]

\[ \begin{align*}
5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 & = 50; \\
10 + 10 + 10 + 10 + 10 & = 50; \quad 10 \times 5 = 5 \times 10 = \mathbf{50}
\end{align*} \]

• If the owner of each garden sold the lettuces at 10 p each, how much money would they each make?
\[ \begin{align*}
25 \times 10 \ p & = 20 \times 10 + 5 \times 10 = 200 \ p + 50 \ p = \mathbf{250} \ p \\
& = \mathbf{2} \times 50 \ p = \mathbf{\£250}
\end{align*} \]

b) In each row: 10 \times 10 p = 100 p = \£1
In 5 rows: 5 \times \£1 = \mathbf{£5}

Individual work, monitored
Drawn on BB or use enlarged copy master or OHP
Discussion, reasoning, agreement, praising
T revises the terms: multiplier, product, factor (e.g. 5 \times 10 is a 2-factor multiplication)
Elicit that order of factors in a multiplication does not matter
T begins to show usual way of writing a sum of money.

28 min
### Lesson Plan 34

**Notes**

Whole class activity
Ps can show jumps on class number line with the animals stuck to straws.

Or use enlarged copy master or OHP

In unison. Repeat for Sparrow’s.

Table drawn on BB or use enlarged copy master or OHP

Agreement, praising

Feedback for T

Individual work, monitored, (helped)

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Accept any correct operation, e.g. 10 + 3 + 10 + 3 + . . .

T revises the terms:

\[ \frac{65}{5} = 13 \]

\[ 5 \]

dividend, divisor, quotient

**Activity 7**

*PbY3a, page 34, Q.2*

Read: *Frog jumps 10 units at a time and Sparrow jumps 5 units at a time along the number line.*  
*Draw their jumps and write the numbers they land on if:*  
a) *they start from 100,*  
b) *they start from 60.*

Deal with one part at a time. Ps come out to BB to show first Frog’s and then Sparrow’s jumps, writing each number landed on below the number line.

Let’s say Frog’s numbers: ‘100, 110, 120, 130, 140, 150, 160’.  
Let’s make a table to show where they have got to after the same number of jumps. Ps come out to fill in data.

**BB:**

<table>
<thead>
<tr>
<th></th>
<th>Number of jumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>F</td>
<td>100 110 120 130 140 150 160 170 180</td>
</tr>
<tr>
<td>S</td>
<td>100 105 110 115 120 125 130 135 140</td>
</tr>
</tbody>
</table>

Elicit that:  
\[ F = 100 + \text{Number of jumps} \times 10 \]
\[ S = 100 + \text{Number of jumps} \times 5 \]

• Where would they each get to after 9 (10) jumps?

Repeat in similar way for part b), with table as:

<table>
<thead>
<tr>
<th></th>
<th>Number of jumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start</td>
<td>1 2 3 4 5 6 7 8</td>
</tr>
<tr>
<td>F</td>
<td>60 70 80 90 100 110 120 130 140</td>
</tr>
<tr>
<td>S</td>
<td>60 65 70 75 80 85 90 95 100</td>
</tr>
</tbody>
</table>

**Extension**

If they started at zero, where would they get to after 4 (7, 15) jumps?

---

**Activity 8**

*PbY3a, page 34*

Q.3 Read: *Write an addition, a multiplication and a division about each picture.*

Deal with one part at a time. Review at BB with whole class.

Ps dictate operations to T, or come out to write on BB: e.g.

a) \[ 50 + 15 = 65; \ 5 \times 13 = 5 \times (10 + 3) = 65; \ 65 \div 5 = 13 \]
b) \[ 50 + 50 + 50 + 50 + 50 + 50 = 350; \ 7 \times 5 \times 10 = 350; \ 350 \div 7 = 50; \ (or \ 7 \times 5 \text{ tens} = 35 \text{ tens}; \ 35 \text{ tens} \div 7 = 5 \text{ tens}) \]

Elicit that the dividend and divisor cannot be interchanged (except of course when they are the same number, e.g. \( 5 \div 5 \))

Individual work, monitored, (helped)

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

Accept any correct operation, e.g. \( 10 + 3 + 10 + 3 + . . . \)

T revises the terms:

\[ \frac{65}{5} = 13 \]

\[ 5 \]

dividend, divisor, quotient

---

**Activity 9**

**Oral work**

T writes two digits of several 3-digit numbers on BB. e.g.

\[ 1 \ 2 \ \square \ 3 \ \square \ 0; \ \square \ 2 \ \square \ 8 \ \square; \ \square \ 1 \ 9; \ \square \ 3 \ \square \ 5; \ \square \ 2 \ 0; \ \square \ 2 \ \square \ 3; \ \square \ 1 \ \square \ 2 \]

a) Which numbers could be exactly divisible by 5? What could the numbers be? Elicit that \( \square 1 \ 9 \text{ and } 1 \square 2 \) are impossible.

b) Repeat for numbers exactly divisible by 10.  

**Extension:** c) 100

Whole class activity

T chooses Ps at random

At a good pace

Agreement that:

a) only 0 or 5 as units digit
b) only 0 as units digit

Whole class activity

T chooses Ps at random

At a good pace

Agreement that:

a) only 0 or 5 as units digit
b) only 0 as units digit

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<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tables practice, revision, activities, consolidation</td>
<td></td>
</tr>
<tr>
<td><em>PbY3a, page 35</em></td>
<td></td>
</tr>
<tr>
<td><em>(Complete PbY3a, page 33, Q.4b if necessary.)</em></td>
<td></td>
</tr>
</tbody>
</table>
R: Mental calculation
C: Multiplication and division up to 200. Even and odd
E: Over 200

Activity 1
Missing numbers
Let's fill in the missing numbers. Ps come to BB to fill in numbers, saying the complete multiplication or division. Class agrees/disagrees.

BB:

- **a)**
  
  \[ 70 \times 2 \quad 140 \div 10 \quad 14 \times 5 \quad 70 \div 2 = 35 \div 5 = 7 \]

- **b)**
  
  \[ 200 \div 5 = 40 \quad 4 \times 3 = 12 \times 10 = 120 \quad 20 \times 5 = 100 \div 5 = 20 \times 100 \]

5 min

Activity 2
Equal values
Let's join up the equal values. BB:

Ps come out to BB to join up (or arrange in pairs) and to write values above or below each box. Class points out errors.

Let's say the values in decreasing order: '200, 180, 160, 120, 20'

10 min

Activity 3
Making 120
A magician is making magic spells about the number 120. Let's help him find the multiplications and divisions he needs!

BB:

- **a)** Ps come to BB to fill in missing numbers, saying the complete multiplication or division.

  \[ 240 \div 2 \quad 60 \times 2 \quad 60 \div 3 \quad 12 \times 10 \quad 40 \times 3 \]

- **b)** Who can think of other ways to make 120? (e.g. 6 \( \times \) 20, 4 \( \times \) 30, 120 \( \times \) 1, 480 \( \div \) 4, 100 + 20, 200 – 80, etc.)

15 min

Activity 4
Mental calculations
T says an operation, Ps write only the answers in Ex. Bks. (*Heading: Lesson number and date*)

- **a)** \[ 90 \times 2 – 5 = 175 \]
- **b)** \[ 400 \div 2 + 2 = 202 \]
- **c)** \[ 5 \times 30 = 150 \]
- **d)** \[ 300 \div 2 – 47 = 103 \]
- **e)** \[ 2 \times 70 – 3 = 137 \]
- **f)** \[ 150 \div 5 = 30 \]

Review at BB with whole class. Ps change to coloured pencils and mark/correct own work.

Who had all 6 correct? Who made a mistake? What kind of mistake? Who did the same? etc.

Let's write these numbers in decreasing order. What sign should we write between them? (>) Ps write out numbers in Ex. Bks, T on BB.

BB: 202 > 175 > 150 > 137 > 103 > 30

If we wanted to put these numbers into two sets, how could we do it? (even or odd, 2 or 3 digits, divisible or indivisible by 5, etc.) Let's use odd and even sets. Which numbers should go where? Ps come out to BB to write numbers in correct sets. Class agrees/disagrees.

20 min

Extension

**Notes**

Whole class activity

Written on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Whole class activity

Drawn on BB or use enlarged copy master or OHP (or use as cards, cut out and stuck to BB)

Reasoning, agreement, praising

In unison

Whole class activity

Table written on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

Praise creativity

Individual work

T repeats slowly and Ps nod heads when they are ready to continue

T has SB or OHP already prepared and writes in results as dictated by Ps.

Agreement, self-correction, evaluation, praising

Feedback for T

Whole class activity. Use enlarged copy master or OHP

BB: Venn diagram

Praising
Q.1 Read: Complete the table.

Who can explain to us what we have to do?
(2nd row: multiply numbers in top row by 2; 3rd row: multiply numbers in top row by 5; 4th row: multiply numbers in top row by 10)

Let's see how much of the table you can complete in 4 minutes!

Review at BB with whole class. A, how did you do fill in the table? Who did it another way? (e.g. by rows or by columns)

Ps recite the multiples of 2 (5, 10) and T uncovers a row at a time on already completed table. Ps correct their mistakes.

Solution:

28 min

6 PbY3a, page 36, Q.2

a) Read: Exchange these amounts for £2 coins. Draw the £2 coins in the boxes.

What do you notice about the picture on the LHS of the first box? (3 \times 4 = 12) £1 coins = £12.

Let's exchange the £1 coins for £2 coins. P comes to BB to circle £1 coins in pairs and to draw 6 £2 coins (or to stick 6 £2 coins on BB)

Who can write an equation about it?

Repeat for the 2nd picture in part a).

b) Read: Exchange these amounts for £20 notes. Draw the £20 notes.

What do you notice about the picture on the LHS of the first box? (4 \times 3 = 12) £10 notes = £120.

Let's exchange the £10 notes for £20 notes. P comes to BB to circle £10 notes in pairs and to draw 6 £20 notes (or to stick £20 notes on BB)

Who can write an equation about it?

Repeat for the 2nd picture in part b).

Discuss connections between values in parts a) and b). (10 times more)

(Or done as individual work, monitored and reviewed.)

33 min
### Lesson Plan 36

#### Activity

7  
**PbY3a, page 36**  
Q.3 Read: *Practise calculation.*

Elicit that there are $3 \times 5 = 15$ calculations. Let’s see how many you can do in 3 minutes! Start...now!...Stop!


Encourage Ps to use the names of the components. e.g.
- missing factor is found by dividing the product by the other factor: $\square \times 7 = 140; \; 140 \div 7 = 20$
- missing divisor is found by dividing the dividend by the quotient: $16 \div \square = 8; \; 16 \div 8 = 2$, etc.

---

8  
**PbY3a, page 36**  
Q.4 Read: *Among how many children can 60 apples be shared equally if we do not cut up any apples? Show your answer by writing divisions.*

Encourage Ps to list the divisions in a logical order. Elicit that they should try the divisors 3, 4, 5, ... and only write the division if there is no remainder, i.e. if the number of apples is divisible by that number.

Let’s see how many you can write in 2 minutes! Start...now!...Stop!

Review at BB with whole class. Ps dictate divisions one after the other and T writes on BB. Class points out any wrong or missed divisions.

**BB:**

<table>
<thead>
<tr>
<th>$60a \div 2 = 30a$</th>
<th>$60a \div 3 = 20a$</th>
<th>$60a \div 4 = 15a$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$60a \div 5 = 12a$</td>
<td>$60a \div 6 = 10a$</td>
<td>$60a \div 10 = 6a$</td>
</tr>
<tr>
<td>$60a \div 12 = 6a$</td>
<td>$60a \div 15 = 4a$</td>
<td>$60a \div 20 = 3a$</td>
</tr>
<tr>
<td>$60a \div 30 = 2a$</td>
<td>$60a \div 60 = 1a$</td>
<td>$(60a \div 1 = 60a)$</td>
</tr>
</tbody>
</table>

---

9  
**Odd and even numbers**

T writes 'Odd' and 'Even' at each side of BB. T says a number and Ps say whether it is odd or even. T writes in appropriate column.

e.g. 0, 1, 4, 7, 8, 10, 21, 34, 67, 98, 100, 121, 134, 167, 198, etc.

(Ps can add own numbers to each set if there is time.)

Elicit that:
- if the last digit is even, the number is always even;
- if the last digit is odd, the number is always odd.

---

6  
**Feedback for T**

Individual work, monitored (helped)

Keep to time limit

Agreement, self-correction, evaluation, praising

If problems, write calculation on BB.

Feedback for T

Reasoning, agreement, self-correction, praising

Discussion on whether a group of 1 person could be valid – not really, as 'shared' suggests more than 1 person

---

Whole class activity

At speed round class

**BB**  
**Odd**  
1, 7, 21, 67  
0, 4, 8, 10, 121, 167, ...  
34, 98, ...

Feedback for T

Agreement, praising
Lesson Plan

R: Mental calculation
C: Order of operations
E: Money problems

Week 8

Activity

1 Logic puzzle
Study this diagram. Think about what the rule could be.
BB:

Ps come to BB to fill in missing numbers and write their calculation. Class agrees or disagrees. What is the rule?
number in outer circle = 2 × number in same segment of middle circle

2 Sequences
a) The first term of a sequence is 100. Each following term is 6 more than the previous term. Ps say terms in order round class.
Ps: '100, 106, 112, 118, 124, 130, 136, 142, 148, 154, ...'
b) The first term of a sequence is 200. The 2nd term is 197. What can the rule be? (Decreasing by 3) Let's continue it.
Ps: '200, 197, 194, 191, 188, 185, 182, 179, 176, 173, ...'
c) Fill in the numbers missing from the snakes. What is the rule?
i) ii)

3 Order of operations
Which operation should we do first? Ps come to BB to point to first operation and write result above sign, then to complete calculation and fill in the result. Class agrees/disagrees.
BB: 

Revise order of operations:
• do operations inside brackets first;
• do multiplication and division before addition and subtraction
• if only multiplication and division, or addition and subtraction, work from left to right;
• if only addition (multiplication) order does not matter – do calculations in easiest order.
4  True of False?
Let's play a game. I will show you a mathematical statement. If you think it is true, stand up, but if you think it is false put your hands on your head when I say.

BB:

a) $2 \times 60 - 60 = 2 \times (60 - 60)$ Show me . . . now! (false)

b) $65 + 2 \times 50 = 65 + (2 \times 50)$ Show me . . . now! (true)

c) $(15 + 80) - 60 = 15 + (80 - 60)$ Show me . . . now! (true)

d) $120 - 70 + 5 = 120 - (70 + 5)$ Show me . . . now! (false)

e) $120 - 70 ÷ 5 = (120 - 70) ÷ 5$ Show me . . . now! (false)

f) $5 \times 12 + 50 = (5 \times 12) + 50$ Show me . . . now! (true)

20 min

5 Money
Which of these amounts of money can be made up from £2 coins?

BB: £4 £14 £53 £3 £94 £154
£23 £34 £63 £74 £93 £183

Ps come out to BB to underline those which can, and to say how many £2 coins would be needed. Class agrees/disagrees.

What do the values remind you of? (even and odd numbers)

25 min

6 PbY3a, page 37
Q1 Read: Practise calculation.
Elicit that there are $4 \times 3 = 12$ calculations. Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!
Review at BB with whole class. Mistakes corrected.
Who had all 12 correct? Who made a mistake? What kind of mistake? etc.
Discuss order of operations: a) and b): done from left to right, c) and d): $\times$ or $\div$ done first

Solution: a) 110; 70; 160 b) 120; 3; 4
c) 70; 84; 81 d) 135; 23; 60

30 min

7 PbY3a, page 37
Q2 Read: Which of the numbers 0, 1, 2, 3, 4, or 5 could be put in the place of the missing digits so that the numbers are even? List the possible 3-digit numbers.

Review at BB with whole class. Ps come to BB to write (or show with number cards) the possible numbers, explaining reasoning. Class agrees/disagrees. Mistakes corrected.

Solution:
a) 15 150, 152, 154 b) 1 5: None – always odd
c) 16: 116, 216, 316, 416, 516 d) 10 100, 102, 104

35 min
Lesson Plan 37

Individual work, monitored helped

Differentiation by time limit

Ps explain reasoning at BB

Class agrees/disagrees.

Discuss alternative methods and any mistakes made.

BB: 120 p = £1.20

Extension

Ps could make up own problem using the numbers 5, 10 and 70.

Whole class activity

Drawn on BB or use enlarged copy master or OHP
(or individual work if Ps wish, reviewed with whole class)

Discussion on how to complete the puzzle

Ps suggest where to start and where to go next.

Reasoning, agreement, praising

<table>
<thead>
<tr>
<th>Across</th>
<th>Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>a 152 − 20 × 2 = 112</td>
<td>a 200 ÷ 10 − 9 = 11</td>
</tr>
<tr>
<td>d 60 + 100 − 10 = 150</td>
<td>b 12 + 70 × 2 = 152</td>
</tr>
<tr>
<td>e 100 ÷ 5 + 2 = 22</td>
<td>c 400 ÷ 2 + 2 ÷ 1 = 202</td>
</tr>
</tbody>
</table>

Solution:
### Lesson Plan

<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y3</strong></td>
<td><strong>Lesson Plan</strong></td>
</tr>
<tr>
<td><strong>R:</strong> Mental calculation</td>
<td><strong>38</strong></td>
</tr>
<tr>
<td><strong>C:</strong> Calculation with quantities (length, capacity, mass)</td>
<td></td>
</tr>
<tr>
<td><strong>E:</strong> Numbers over 200</td>
<td></td>
</tr>
</tbody>
</table>

#### Activity

### 1. Number ladders

Discuss the standard units in each ladder first: a) length in cm; b) capacity in litres. T reminds Ps of short way of writing 'litre' ( \( \ell \)).

Think about what the rules could be.

What quantities are missing from the ladders?

Ps come to BB one after the other to fill in the missing quantities and give their reasoning.

Class agrees or disagrees.

What is the rule? (a) increasing by 40 cm; (b) decreasing by 30 litres

What is the range of each ladder?

- a) 50 cm to 330 cm
- b) 20 litres to 230 litres

#### 2. Equal quantities

Talk about the capacity of the barrels first and what they might hold. Which can hold more? How much more? (160 \( \ell \) – 150 \( \ell \) = 10 \( \ell \))

BB:

- 90 \( \ell \times 2 \) – 20 \( \ell \)
- 70 \( \ell \times 3 \) – 60 \( \ell \)
- 10 \( \ell \times 70 \) \( \times \) 2

Which quantity belongs to which barrel? Ps come out to BB to choose a quantity and join up to (or put beneath) the matching barrel. Class checks that they are correct.

#### 3. Open statements

Let’s see what you remember about standard units of measure. I have missed out something from each of these statements. Who can come and complete them?

BB:

- a) 1 m = \[ \begin{array}{c} 100 \end{array} \] cm = \[ \begin{array}{c} 1000 \end{array} \] mm
- b) 196 cm = \[ \begin{array}{c} 1 \end{array} \] m 96 cm
- c) 2 m 24 cm \( \rightarrow \) 192 cm
- d) 1 litre = \[ \begin{array}{c} 1 \end{array} \] cl = \[ \begin{array}{c} 1000 \end{array} \] ml
- e) 1 kg = \[ \begin{array}{c} 1000 \end{array} \] g
- f) 1 km = \[ \begin{array}{c} 1000 \end{array} \] m

Ps come out to fill in missing items and to read out the complete statement. What is it a measure of? What would you use to measure it?

Let’s say the units of length in decreasing order: 'km, m, cm, mm'

- In unison

#### 4. Capacity and mass

- a) Everyone stand up! Hold your arms 1 metre apart . . . now!
  - T walks round class checking against metre stick, praising or correcting.
  - Repeat for 10 cm (50 cm, 100 cm, 20 cm)

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

- a) 50 cm to 330 cm
- b) 20 litres to 230 litres

Whole class activity

Use enlarged copy master or OHP

(or items enlarged, cut out and stuck to BB)

Initial discussion about diagram

At a good pace

Reasoning, agreement, checking, praising

Whole class activity

T has BB or SB or OHP already prepared

At a good pace

Discussion on what is being measured (length, capacity, mass or weight)

Agreement, praising

In unison

Whole class activity

In unison

Feedback for T. Praising only

Use lengths of card as a check

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Activity

b) T shows class an open-topped transparent plastic cube. P comes out to measure an edge. (10 cm) Elicit that all edges are 10 cm. (A cube has square faces, so edges are equal.)

T shows class a unit cube. P comes out to measure an edge. (1 cm) Elicit that all its edges are 1 cm.

How many 1 cm cubes do you think will fill the 10 cm cube? (Ask several Ps what they think.) Let’s check. T shows that 10 are needed along one edge and that $10 \times 10 = 100$ are needed to cover the base.

If we need 100 cm cubes for 1 layer, how many would we need to fill the cube? (Cube is 10 cm high, so we need 10 layers, i.e. $10 \times 100$ cm cubes = 1000 centimetre cubes = 1000 cc)

How much liquid does the 10 cm cube hold? (1 litre) Let’s check. T (or P) pours 1 litre of water into a measuring jug and then into the cube.

Elicit from the scale on the jug that: 1 litre = 100 cl = 1000 ml (BB)

How many of these cm cubes take up the same space as 1 litre (1 cl, 1 ml) of water? (1000 cc, 10 cc, 1 cc)

c) Who remembers what is the mass of 1 litre of water? (Remind Ps if necessary of 1 litre of water being balanced by a 1 kg weight.)

Elicit that 1 kg = 1000 g (BB). Let’s make a table on the BB to compare all these standard units of measure. (T, with Ps’ help)

Notes

Discussion on relation of length to capacity

T could use multilink 1 cm cubes

T has 10 strips of 10 cubes stuck together

T has 10 layers of 100 cubes already prepared as a check

T reminds Ps if necessary of filling the glass cube with water in Lesson 23

Discussion, agreement

BB: Measurements of water

1000 cc $\rightarrow$ 1 litre $\rightarrow$ 1 kg

10 cc $\rightarrow$ 1 cl $\rightarrow$ 10 g

1 cc $\rightarrow$ 1 ml $\rightarrow$ 1 g

Praising

Could it be true?

I will say some sentences about measurement but some of them might not be true. Tell me if you think I might have made a mistake.

a) I drank 200 cl of milk for my breakfast. (200 cl = 2 litres, a lot of milk for 1 person; 20 cl more realistic – show on measuring jug)

b) My height is more than 1 m but less than 2 m. (Possible – show with metre rule)

c) I am 120 months old. (120 months = 10 years, so not true)

d) I weigh 630 kg. (should be 63 kg – show on bathroom scales)

Notes

Whole class activity

T asks several Ps what they think

Ps suggest corrections to statements

Discussion, reasoning, checking, agreement, praising

All done in good humour!

PbY3a, page 38

Q.1 Read: Fill in the missing items.

Deal with one part at a time. Discuss type of measure (length, capacity or mass) and how many smaller units are in the larger unit. (e.g. 100 cm = 1 m). Ps fill in missing items.

Review with whole class. Mistakes corrected.

Solution:

a) 1 m 72 cm = 172 cm

148 cm $= 1$ m 48 cm

1 and a half metres = 150 cm

c) 1 litre 25 cl = 125 cl

151 cl $= 1$ litre 51 cl

1 and a half litres = 150 cl

e) 2 litres water $\rightarrow$ 2 kg

1 km $\rightarrow$ 300 m

f) 200 g $\rightarrow$ 1 kg

130 cl $\rightarrow$ 1 litre

31 min
### Activity

#### Lesson Plan 38

**Notes**

- Individual work, monitored, (helped)
- Table drawn on BB or use enlarged copy master or OHP
- Differentiation by time limit
- Ps who finish quickly add own columns to table
- Reasoning, agreement, self-correction, praising
- Feedback for T

---

#### Q.2

Mrs Mouse had 180 g of cheese. Help her to work out how much cheese has been eaten and how much remains.

**Complete the table.**

<table>
<thead>
<tr>
<th>Eaten (g)</th>
<th>140</th>
<th>170</th>
<th>25</th>
<th>132</th>
<th>75</th>
<th>34</th>
<th>115</th>
<th>40</th>
<th>180</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remaining (g)</td>
<td>180</td>
<td>10</td>
<td>155</td>
<td>48</td>
<td>105</td>
<td>146</td>
<td>65</td>
<td>140</td>
<td>0</td>
</tr>
</tbody>
</table>

**Rule:** Eaten + Remaining = 180 g

---

#### Q.3

- **Read:** Fill in the missing numbers and standard units.
- **BB:**
  - a) 45 cm × 2 = 90 cm
    - 180 kg ÷ 10 = 18 kg
  - b) 150 litres ÷ 5 = 30 litres
    - 23 litres × 5 = 115 litres
  - c) 1 m 30 cm ÷ 2 = 50 cm + 15 cm
    - 1 m 30 cm × 5 = 6 m 50 cm

---

#### Q.4

**Read:** Write a plan, do the calculation and write the answer as a sentence.

- **a)** Ps read problem by themselves and solve in Pbs. Review with whole class. Mistakes corrected.
  - **Plan:** Brother: 90 cm  Sarah: 90 cm + 40 cm
  - **Calculation:** 90 cm + 40 cm = 130 cm = 1 m 30 cm
  - **Answer:** Sarah is 1 m 30 cm tall.

- **b)** P reads problem. Demonstrate with books/pencil at front of class.
  - **Plan:** Desk: 70 cm; 1 book: 5 cm, 6 books: 6 × 5 cm
  - **Calculation:** 70 cm + 6 × 5 cm = 70 cm + 30 cm = 100 cm = 1 m
  - **Answer:** The pencil will be 1 metre from the floor.
Lesson Plan

Week 8

Y3

<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>Lesson Plan</strong></td>
</tr>
<tr>
<td><strong>Sequences</strong></td>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td>a) The first term of a sequence is 170. Each following term is 8 less than the previous term. What is the sequence?</td>
<td>Whole class activity</td>
</tr>
</tbody>
</table>
| Ps: ‘170, 162, 154, 146, 138, 130, 122, 114, 106, 98, 90, 82, 
. . .’ | T chooses Ps at random |
| b) The first term of a sequence is 110 and the sequence is increasing by 9. What is the sequence? | At speed |
| Ps: ‘110, 119, 128, 137, 146, 155, 164, 173, 182, 191, 
. . .’ | If P makes a mistake, the next P corrects it. |
| **2** | **Notes** |
| **Missing values** | Praise |
| Let’s fill in the missing items. Ps come to BB to fill in missing numbers, units and signs, saying the complete operation. Class agrees/disagrees. | Whole class activity |
| BB: | Drawn on BB or use enlarged copy master or OHP |
| | At a good pace |
| | Reasoning, agreement, praising |
| **3** | **Notes** |
| **PbY3a, page 39** | Individual work, monitored, helped |
| Q.1 Read: Write additions or subtractions about the pictures. | Drawn on BB or use enlarged copy master or OHP |
| T explains task. Elicit that parts a) and b) are additions and parts c) and d) are subtractions. Ps write values in LH and RH boxes before writing the addition or subtraction. | Reasoning, agreement, self-correction, praising |
| Review at BB with whole class. Mistakes corrected. | Discussion, agreement |
| **Solution:** | Extra praise if Ps notice by themselves |
| a) 70 p + 26 p = 96 p | |
| b) £170 + £26 = £196 | |
| c) 63 p – 23 p = 40 p | |
| d) £163 – £23 = £140 | |
| Who notices a connection between them? (First numbers are 100 more in 2nd part of each row, but numbers being added or taken away are the same, so results are 100 more) | |
| **4** | **Notes** |
| **Multiplication of mass** | Whole class activity |
| Jenny has made some treacle toffee for a school fete. She wants to pack pieces of equal weight (mass) into bags and then label each bag with its total weight (mass). Let’s help her by completing the table. | Table drawn on BB or use enlarged copy master or OHP |
| BB: | Ps finished first may add own columns |
| | Ps suggest ‘rule’ for table |
| | Reasoning, agreement, praising |
| | Orally or in Ex. Bks. |

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### Activity 5

**PbY3a, page 39**

Q.2 Read: *For each sequence, complete the rule and write the next 3 terms.*

Review orally with whole class. Mistakes corrected.

**Solution:**

a) increasing by 20: 27, 47, 67, 87, 107, 127,

b) increasing by 30: 9, 39, 69, 99, 129,

c) decreasing by 30: 196, 166, 136, 106, 76,

d) decreasing by 40: 200, 160, 120, 80, 40,

---

### Activity 6

**PbY3a, page 39**

Q.3 Read: *Practise calculation.*

How many calculations are there? (3 × 3 = 9; 6 additions and 3 subtractions). Let’s see how many you can do in 3 minutes! Start . . . now! . . . Stop!

Review orally round class. Ps change pencils. Mistakes corrected.

Who had 9 (8, 7, less than 7) correct? What were your mistakes? Who does not know what they did wrong? etc.

Did anyone notice anything about the additions (subtractions)? Discuss similarities and connections. (e.g. if 100 is added to either term in a 2-term addition, the sum is 100 more)

---

### Problems

Listen carefully to these problems. I will read each one twice. When I read it the second time, write down the data in your Ex. Bks.

Do the calculation and show me the answer with number cards (or on scrap paper) when I say.

---

a) **Alison has 58 picture cards and Betty has 30 more than Alison. How many cards does Bettina have?**

Show me . . . now! (88)

B, how did you get your answer? Who agrees? etc.

**BB:** A: 58, B: 58 + 30 = 88

**Answer:** Betty has 88 cards.

b) **Sally has collected 58 buttons, 30 more than Roberta. How many buttons does Roberta have?**

Show me . . . now! (28)

C, how did you get your answer? Who agrees? etc.

**BB:** S: 58, R: 58 – 30 = 28

**Answer:** Roberta has 28 buttons.

c) **Edward has 58 stamps and Frank has 30 stamps. How many stamps do they have altogether?**

Show me . . . now! (88)

D, how did you get your answer? Who agrees? etc.

**BB:** E: 58, F: 30, E + F = 58 + 30 = 88

**Answer:** They have 88 stamps altogether.

Who has more? How many more? (Edward has 28 stamps more.)

Discuss similarities in the data in all 3 problems.

---

### Notes

- Individual work, monitored (helped)
- Agreement, self-correction, praising
- Continue the sequences orally if time
- Individual work, monitored
- Keep to time limit
- Agreement, self-correction, evaluation, praising
- Feedback for T
- Whole class discussion
  - e.g. 27 + 60 = 87
  - 27 + 160 = 127 + 60 = 187

---

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<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y3</strong></td>
<td><strong>Lesson Plan 39</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>8</strong></th>
<th><strong>PbY3a, page 39</strong></th>
</tr>
</thead>
</table>
| Q.4   | Read: *Fill in the missing numbers.*  
Elicit that there are $3 \times 4 = 12$ calculations (8 additions and 4 subtractions). Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop! 
Review orally round class. Ps change pencils. Mistakes corrected. 
Who had no mistakes? Who made 1 (2, more than 2) mistakes? 
What were they? Who did the same? etc. 
Ps with all correct explain to class how they did the calculations so accurately and quickly. 
Discuss similarities in questions. |
| **40 min** | Individual work, monitored |
|               | Keep to time limit |
|               | Agreement, self-correction, evaluation, Praising |
|               | Feedback for T |
|               | Awards given for excellent work (stars, stickers, etc.) |
|               | e.g. $29 + 10 = 39$ |
|               | $29 + 110 = 139$ |

<table>
<thead>
<tr>
<th><strong>9</strong></th>
<th><strong>PbY3a, page 39</strong></th>
</tr>
</thead>
</table>
| Q.5   | Read: *Greg and Helen have 58 postcards altogether.* *Greg has 30 more than Helen.* *How many cards do they each have?*  
T allows 2 minutes for Ps to try to work out the answer. 
E, what is your answer? Who agrees? Who thinks something else? Who did it another way? Who could not solve it? 
Discussion on strategies for solution. (Could make a table and try lots of different values for Greg and Helen until the correct solution is found but not very concise mathematically.) 
*Logical solution:*  
Greg had 30 more, so give Greg his 30 more first. 
That leaves $58 - 30 = 28$ cards to share equally between them. 
So they each get $28 \div 2 = 14$ cards. 
Helen: $14$ cards Greg: $30 + 14 = 44$ cards. 
*Check:* $14 + 44 = 58$ |
<p>| <strong>45 min</strong> | Individual trial first |
|               | Monitored |
|               | Discussion, reasoning, agreement, checking, self-correction. |
|               | Praise any valid strategy |
|               | Demonstrate if necessary with 2 Ps at front of class |
|               | Extra praise if Ps thought of this method without help! |</p>
<table>
<thead>
<tr>
<th>Y3</th>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tables practice, revision, activities, consolidation of units of measure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phy3a, page 40</td>
<td></td>
</tr>
</tbody>
</table>

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## Y3

### Activity

#### 1 Boom!

T: Is 99 divisible by 3? (Yes, because $99 = 3 \times 33$)

Is 100 divisible by 3? (No, because $100 = 3 \times 33 + 1$, so there would be a remainder of 1)

Let’s play Boom! Everyone stand up!

Let’s start at 100 and say ‘boom’ instead of every number which is divisible by 3.

Ps: 100, 101, boom, 103, 104, boom, 106, 107, boom, 109, 110, boom, . . .

#### 2 Number strips

Ps have these numbers strips already on desks and T has large copies on BB for demonstration only:

- 5 strips 10 cm by 1 cm (e.g. red card)
- 5 strips 9 cm by 1 cm (e.g. dark blue card)
- 5 strips 6 cm by 1 cm (e.g. pink card)
- 5 strips 3 cm by 1 cm (e.g. yellow card)

Elicit that the unit used as a measure is a 1 cm square (cm cube if using Cuisennaire rods or multilink cubes).

a) Lay the five 9 cm strips one exactly below the other like this. (T shows on BB.)

How many cm squares (or cubes) are there on 1 strip? (9)

How many are there on the 5 strips altogether? (45)

(T writes on BB and Ps write in Ex. Bks.)

b) Now lay the five 6 cm strips one exactly below the other like this (T shows on BB) and then lay the five 3 cm strips beside them.

How many cm squares (or cubes) are there altogether? (45)

(T writes on BB and Ps write in Ex. Bks.)

Who notices something about the shapes you made in a) and b)? (both equal)

(15 min)

### Notes

Whole class activity

Use copy master, enlarged, coloured and strips cut out, or Cuisennaire rods or multilink cubes)

(or paired work)

Discussion on unit of measure

Ps check lengths with rulers.

BB: $99 \div 3 = 33$

$100 \div 3 = 33, r 1$

If Ps make a mistake they sit down and next P corrects it.

At speed round class

In good humour! Praising
## Lesson Plan 41

### Activity

#### PbY3a, page 41

Q.1 Read: How many pence are in the boxes? Write a multiplication about each picture.

Review at BB with whole class. Mistakes corrected.

**Solution:**
- a) $6 \times 2 = 12$ p
- b) $6 \times 20 = 120$ p
- c) $3 \times 5 = 15$ p
- d) $3 \times 50 = 150$ p

Who notices a connection between them? (Elicit that if the multiplier is 10 more, then the product is also 10 more.)

How would we write the 120 p (150 p) as £s? (£1.20, £1.50)

### Notes

Individual work, monitored, helped

Drawn on BB or use enlarged copy master or OHP

Reasoning, agreement, self-correction, praising

BB: $3 \times 50 = 50 + 50 + 50 = 150$

Discussion, agreement

Extra praise if P9 notice by themselves

---

### Activity

#### Multiplication (3, 6, 9)

Study this table. Who can explain to us what we have to do?

- 2nd row: multiply numbers in top row by 3;
- 3rd row: multiply numbers in top row by 6;
- 4th row: multiply numbers in top row by 9

Ps come out one after the other to choose a square at random and fill it in, saying the complete multiplication. Class points out errors.

Ps use easier products to help with difficult numbers.

(e.g. $9 \times 15 = 9 \times 10 + 9 \times 5 = 90 + 45 = 135$)

Ps choose other numbers to put in the empty column headings at end of table and use known products to help complete the columns.

**Solution:**

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>40</th>
<th>70</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>12</td>
<td>15</td>
<td>18</td>
<td>21</td>
<td>24</td>
<td>27</td>
<td>30</td>
<td>35</td>
<td>45</td>
<td>60</td>
<td>90</td>
<td>120</td>
<td>210</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>24</td>
<td>30</td>
<td>36</td>
<td>42</td>
<td>48</td>
<td>54</td>
<td>60</td>
<td>90</td>
<td>120</td>
<td>240</td>
<td>420</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0</td>
<td>6</td>
<td>12</td>
<td>18</td>
<td>24</td>
<td>30</td>
<td>36</td>
<td>42</td>
<td>48</td>
<td>54</td>
<td>60</td>
<td>90</td>
<td>120</td>
<td>240</td>
<td>420</td>
<td>600</td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td>9</td>
<td>18</td>
<td>27</td>
<td>36</td>
<td>45</td>
<td>54</td>
<td>63</td>
<td>72</td>
<td>81</td>
<td>90</td>
<td>135</td>
<td>200</td>
<td>360</td>
<td>630</td>
<td>900</td>
</tr>
</tbody>
</table>

What else do you notice about the rows? (the numbers in the row of 9s are 3 times more than those in the row of 3s; the numbers in the row of 6s are 2 times those in the row of 3s)

T says multiplications and divisions from the table. Ps give product or quotient, using the table to help them if necessary.

---

### Notes

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

Reasoning, agreement, praising

E.g. $3 \times 70 = 3 \times 7 \times 10 = 210$

or $3 \times 70 = 3 \times 20 + 3 \times 20 + 3 \times 10$

$= 60 + 60 + 60 + 30 = 210$

Agreement, praising

Orally round class at speed

Ps can ask questions too.

---

### Activity

#### PbY3a, page 41

Q.2 Read: Complete the table.

What do you notice about this table? (Columns could be inserted after ‘10’ in previous table. Columns for 15 and 20 have already been done on BB.)

Remind Ps about easy ways of calculating using known products, e.g. $3 \times 16 = 3 \times 10 + 3 \times 6 = 30 + 18 = 48$

Let's see how much of the table you can complete in 4 minutes!

Review at BB with whole class. Ps read out the multiples in each row in unison. Mistakes corrected. Ps explain how they obtained the difficult products.

**Solution:**

<table>
<thead>
<tr>
<th></th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>33</td>
<td>36</td>
<td>39</td>
<td>42</td>
<td>45</td>
<td>48</td>
<td>51</td>
<td>54</td>
<td>57</td>
<td>60</td>
</tr>
<tr>
<td>b</td>
<td>66</td>
<td>72</td>
<td>78</td>
<td>84</td>
<td>90</td>
<td>96</td>
<td>102</td>
<td>108</td>
<td>114</td>
<td>120</td>
</tr>
<tr>
<td>c</td>
<td>99</td>
<td>108</td>
<td>117</td>
<td>126</td>
<td>135</td>
<td>144</td>
<td>153</td>
<td>162</td>
<td>171</td>
<td>180</td>
</tr>
</tbody>
</table>

---

### Notes

Individual work, monitored

Drawn on BB or use enlarged copy master or OHP

Discussion, reasoning, checking, agreement, praising

Liken rows to sequences increasing by 3 (6, 9)

E.g. $6 \times 16 = 2 \times 3 \times 16 = 2 \times 48 = 96$

Label the rows and compare them

BB: $a + b = c, b = 2 \times a, c = 3 \times a$
### Lesson Plan 41

#### Activity

**Y3**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
<td><strong>Notes</strong></td>
</tr>
</tbody>
</table>
| 6 | *PbY3a, page 41*
|   | **Q.3 Read:** *Calculate the products and quotients.*
|   | How many calculations are there? (4 × 3 = 12; 6 multiplications and 6 divisions).
|   | Let's see how many you can do in 3 minutes! Start . . . now! . . . Stop!
|   | Review orally round class. Ps change pencils. Mistakes corrected.
|   | Who had 12 (11, 10, less than 10) correct? What were your mistakes? Who did the same? etc.
|   | What did you notice about the multiplications (divisions)?
|   | Discuss similarities and connections. (e.g. if multiplier or number being multiplied (multiplicand) is 10 times more, then product will be 10 times more)
|   | **35 min**

| 7 | *PbY3a, page 41, Q.4*
|   | **Read:** *Fill in the missing numbers.*
|   | T chooses Ps at random to give missing numbers. What is the name of the missing component? How did you calculate it? Is it connected to another question in this exercise? In what way? etc.
|   | Encourage Ps to use the words: 'multiplicand', 'factor', 'multiplier', 'product', 'dividend', 'divisor', 'quotient'. Class points out errors.
|   | (Or done as individual work, monitored, helped and reviewed.)
|   | **45 min**

| 8 | *PbY3a, page 41*
|   | **Q.5 Ps read the problems themselves, do the calculations and write the answers as a sentence in their Pbs.**
|   | Review with whole class. Ps explain their solutions.
|   | Class agrees/disagrees or shows alternative methods of solution.
|   | **Solutions:**
|   | a) *Andrew has 90 football stickers, 3 times more than David. How many stickers does David have?*
|   | BB: A: 90, D: 90 ÷ 3 = 30
|   | *Answer:* David has 30 football stickers.
|   | b) *Emma saved £30, which was 1 sixth of the amount that Vicky saved. How much did Vicky save?*
|   | BB: E: £30 = V ÷ 6, V: £30 × 6 = £180
|   | *Answer:* Vicky saved £180.
|   | **45 min**
Lesson Plan

42

Week 9

Activity

| Y3 | R: Addition, subtraction, multiplication, division |
| Y3 | C: Division with remainder |
| Y3 | E: Numbers over 200 |

Notes

Whole class activity
(Grouping/sharing in 9s as individual or paired work, monitored, helped)

Or Ps could use items from their collection

Initial discussion on strategy

Reasoning, agreement, checking, praising

Ps write divisions and checks in Ex. Bks too

Revision of two contexts for division: sharing among 9, grouping in 9s.

1. Division by 9

Ps have 29 counters (or coins, sticks, etc.) already on desks.

- a) Divide the 29 counters into 9 equal groups. How will you do it? (one in 1st group, 1 in 2nd group, etc.)
  - A, come and write a division about it. Who agrees? Who thinks something else? How can we check it? (multiplication)
  - BB: \(29 \div 9 = 3\ c, \text{remainder} 2\ c\)
  - Check: \(9 \times 3 + 2 = 27 + 2 = 29\ c\)

- b) Now put the 29 counters into groups of 9 counters. How will you do it? (Count out 9 counters in 1st group, then 9 counters in 2nd group, etc.)
  - B, come and write a division about it? Is B correct? etc.
  - BB: \(29 \div 9 = 3\ times, \text{and} 2\ c\ remain\)
  - Repeat above with 6 (sharing 29 among 6 boxes, grouping in 6s).

- c) BB: \(29 \div 6 = 4\ c, \text{remainder} 5\ c\)
- d) BB: \(29 \div 6 = 4\ c, \text{and} 5\ c\ remain\)

2. Division by 3

T has BB already prepared

\(152, 185, 122, 151, 181, 121, 150, 120, 184, 182\)

Let’s put these numbers in increasing order. Ps come to BB to rearrange cards, or write out again, crossing off each from original list as it is used.

- BB: \(120, 121, 122, 150, 151, 152, 181, 182, 184, 185\)

- C, come and draw a red dot above the numbers which give a remainder of 1 when divided by 3. Class points out errors.

- D, come and draw a blue triangle above the numbers which give a remainder of 2 when divided by 3. Class points out errors.

Check on BB:

\(120 = 3 \times 40, \quad 120 \div 3 = 40\)
\(121 = 3 \times 40 + 1, \quad 121 \div 3 = 40, \text{r} 1\)
\(122 = 3 \times 40 + 2, \quad 122 \div 3 = 40, \text{r} 2\)

3. Remainders

Let’s put these numbers in the correct place in the table.

What is the remainder when a number is divided by 5?

BB:

\(141, 146, 172, 157, 163, 176, 150, 166\)
\(144, 158, 211, 160, 155, 119, 192\)

Ps come out to BB to choose a number, cross off the list and write in correct column in the table, explaining reasoning. Class agrees/disagrees. If problems, check with a division on the BB.

What can you say about the numbers 150, 155, 160? (multiples of 5, divisible by 5, no remainder when divided by 5)

Elicit that any number with a zero or 5 as units digit is divisible by 5.

Whole class activity

Written on BB or SB or OHP or numbers written on card and stuck to BB

Class agrees/disagrees.

At a good pace

Agreement, checking, praising

What other numbers in the series would have a

- red dot \((124, 127, 154, \ldots)\)
- blue triangle \((125, 128, \ldots)\)

Whole class activity

Drawn on BB or use enlarged copy master or OHP

At a good pace

BB:

<table>
<thead>
<tr>
<th>Remainder when divided by 5</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>141</td>
<td>172</td>
<td>163</td>
<td>144</td>
<td></td>
</tr>
<tr>
<td>146</td>
<td>157</td>
<td>158</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td>176</td>
<td>192</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>166</td>
<td>211</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Agreement, praising
### Activity 4

**Problem**

Listen carefully to this problem. I will read it twice. When I read it the second time, write down the data in your Ex. Bks.

Write a plan and do the calculation. Show me the answer when I say.

*Eve had £1.95 in her purse. She paid her bus fare with nine 20 p coins. How much money did she have left?*

Show me . . . now!  

\[(15 \text{ p})\]

**X**, how did you get your answer? Who agrees? etc.

**BB:**

- **Plan:**
  
  Had:  £1.95  =  195 p  
  
  Spent:  9 \( \times \) 20 p

- **Calculation:**
  
  \[
  195 - 9 \times 20 = 195 - 180 = 15
  \]

**Answer:** Eve had 15 p left.

---

### Lesson Plan 42

**Notes**

- Individual work, monitored
  
  (with number cards or written on scrap paper)

- **P** repeats in own words

- In unison

- Reasoning, agreement, self-correction, praising

**Feedback for T**

---

### PbY3a, page 42

**Q.1 Read:** Pack these apples in boxes of 9. How many boxes will be filled and how many apples will remain?

Ps count the apples, circle them in groups of 9, write a division about it and check with a multiplication.

Review at BB with whole class. **Y**, how many boxes did you fill? How many apples were left over? Who agrees? Who thinks something else? etc. Mistakes corrected.

**BB:**

- 34 a \( \div \) 9 a = 3 (times), remainder 7 a

- **Check:**
  
  \[
  3 \times 9 a + 7 a = 27 a + 7 a = 34 a
  \]

---

### PbY3a, page 42

**Q.2 Read:** Exchange the £1 coins for £10 notes. How many £1 coins will remain? Complete the table.

Do first column on BB with whole class if necessary. Ps may write details of calculations in Ex. Bks. if necessary.

Review at BB with whole class. Mistakes corrected.

**Solution:**

<table>
<thead>
<tr>
<th>coins</th>
<th>46</th>
<th>75</th>
<th>100</th>
<th>107</th>
<th>140</th>
<th>63</th>
<th>121</th>
<th>159</th>
</tr>
</thead>
<tbody>
<tr>
<td>£10 notes</td>
<td>4</td>
<td>7</td>
<td>10</td>
<td>10</td>
<td>14</td>
<td>6</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Ex remaining</td>
<td>6</td>
<td>5</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

---

### Written exercises

T says a division, Ps write it in Ex. Bks. Ps calculate result and check with multiplication. Mistakes corrected.

a) 34 \( \div \) 5 = (6, r 4)  

b) 47 \( \div \) 9 = (5, r 2)  

c) 34 \( \div \) 6 = (5, r 4)  

\[
6 \times 5 + 4 = 34
\]

6 \( \times \) 9 + 2 = 47  

5 \( \times \) 6 + 4 = 34

d) 45 \( \div \) 9 = (5)  

e) 130 \( \div \) 20 = (6, r 10)  

f) 250 \( \div \) 25 = (10)  

5 \( \times \) 9 = 45  

6 \( \times \) 20 + 10 = 130  

10 \( \times \) 25 = 250

Review at BB with whole class. Mistakes corrected.

---

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Q.3 Read: *Practise division. Check with multiplication.*

Do part a) on BB with whole class first only if necessary. Review at BB with whole class Mistakes corrected.

**Solution:**

- a) $19 \div 2 = (9, r 1)$
- b) $25 \div 6 = (4, r 1)$
- c) $30 \div 9 = (3, r 3)$
- d) $27 \div 5 = (5, r 2)$
- e) $53 \div 6 = (8, r 5)$
- f) $134 \div 20 = (6, r 14)$

7. What is the greatest whole number you can have as a remainder when dividing by 2 (4, 7, 10, 19, 27, etc.)? (1, 3, 6, 9, . . .)

Why? (Because if the remainder was 1 more, there would be enough to make another group of 2 (4, 7, . . .))

---

**Extension**

Q.4 Read: *Each box can hold 6 eggs. How many boxes can be filled and how many eggs will remain?*

Complete the table. Complete the rule.

Talk about farmer with lots of hens collecting different numbers of eggs on different days. Why might that be?

P explains to class what each row in table means. (T can show real egg-box). Do first column with whole class if necessary.

Elicit that in the rule:

$E =$ Eggs, $B =$ Boxes filled and $R =$ Remaining eggs

Review at BB with whole class. Mistakes corrected. Rule agreed.

**Solution:**

<table>
<thead>
<tr>
<th>Number of:</th>
<th>30</th>
<th>45</th>
<th>50</th>
<th>121</th>
<th>185</th>
<th>123</th>
<th>182</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>filled</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>20</td>
<td>30</td>
<td>20</td>
<td>30</td>
<td>11</td>
</tr>
<tr>
<td>remaining</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Who can write the rule in another way? Who agrees? Who thinks something else? etc.

---

**Notes**

- Individual work, monitored (helped)
- Written on BB or SB or use enlarged copy master or OHP
- Reasoning, agreement, self-correction, praising
- Feedback for T

---

**Extension**

Individual work, monitored (helped)

Drawn on BB or use enlarged copy master or OHP

Initial discussion about context

Ps can write details of difficult calculations at bottom of page in Pbs if necessary.

- e.g. $185 = 30 \times 6 + 5$
- $70 = 11 \times 6 + 4$

Reasoning, agreement, self-correction, praising

**Rule:**

$E = B \times 6 + R$

- $[B = (E - R) \div 6]$
- $R = E - B \times 6$
### Y3

#### Activity

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | Jumps along the number line  
Study these jumps along the number line. Who can write an operation about them? Ps come out to label the start and end numbers for each jump, then to write additions about them. Who agrees? etc.  
If the arrows pointed in the opposite direction, what would the operations be? Ps come out to write subtractions and show the jumps along the number line in the opposite direction.  
Repeat for 65 + 8 = 73 and 165 + 8 = 173.  
BB: a)\[56 + 8 = 56 + 4 + 4 = 64\]  
\[64 - 8 = 64 - 4 - 4 = 56\]  
\[65 + 8 = 65 + 5 + 3 = 73\]  
\[73 - 8 = 73 - 3 - 5 = 65\]  
b)\[156 + 8 = 156 + 4 + 4 = 164\]  
\[164 - 8 = 164 - 4 - 4 = 156\]  
\[165 + 8 = 165 + 5 + 3 = 173\]  
\[173 - 8 = 173 - 3 - 5 = 165\]  
What do you notice about the two segments of the number line? (Numbers in lower one are 100 more but adding/subtracting is similar.) |
| 2 | Sequences  
The first term of a sequence is 102. Add 6, then 7, then 6, then 7 and so on. Let’s say the sequence.  
| 3 | PbY3a, page 43  
Q.1 Read: Write additions and subtractions about the pictures.  
Talk about the pictures first: how much is in each piggy bank and how much has still to be put in.  
Ps write additions and subtractions in Pbs.  
Review at BB with whole class. Ps come out to BB or dictate to T what to write. Class agrees/disagrees.  
Solution: a)\[146 + 4 = 150\] ( £1.50),  
\[150 - 4 = 146\] ( £1.46)  
b)\[168 + 7 = 175\] ( £1.75),  
\[175 - 7 = 168\] ( £1.68)  
Feedback for T |
| 4 | Missing numbers  
Study the picture carefully. What do you think the rule might be? T asks several Ps what they think. (The sum or difference is 191.)  
BB: Ps come to BB to choose a petal and fill in the missing number, saying the complete addition or subtraction.  
Class agrees/disagrees.  
Who can think of another operation resulting in 191? |

#### Notes

- **Whole class activity**  
Use class number line or enlarged copy master or OHP  
Ps say the operations too  
Discussion, reasoning, agreement, praising  
BB: a)\[56 + 8 = 56 + 4 + 4 = 64\]  
\[64 - 8 = 64 - 4 - 4 = 56\]  
\[65 + 8 = 65 + 5 + 3 = 73\]  
\[73 - 8 = 73 - 3 - 5 = 65\]  
b)\[156 + 8 = 156 + 4 + 4 = 164\]  
\[164 - 8 = 164 - 4 - 4 = 156\]  
\[165 + 8 = 165 + 5 + 3 = 173\]  
\[173 - 8 = 173 - 3 - 5 = 165\]  
Agreement, praising

- **Whole class activity**  
At speed round class  
If P makes a mistake, next P corrects it. Praising only

- **Individual work, monitored, (helped)**  
Use enlarged copy master or OHP  
Discussion, reasoning, agreement, self-correction, praising  
Elicit that 100 p = £1  
Ps write results as £s  
Feedback for T

- **Whole class activity**  
Use enlarged copy master or OHP  
Initial discussion on rule  
At a good pace  
Reasoning, agreement, praising  
Encourage creativity
# Lesson Plan 43

<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y3</strong></td>
<td><strong>Week 9</strong></td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>Missing signs</strong>&lt;br&gt;What is missing from these statements? (signs) Let's fill in the correct sign between the two sides.</td>
</tr>
<tr>
<td></td>
<td>BB:</td>
</tr>
<tr>
<td></td>
<td>a)</td>
</tr>
<tr>
<td></td>
<td>b)</td>
</tr>
<tr>
<td></td>
<td>c)</td>
</tr>
<tr>
<td></td>
<td>d)</td>
</tr>
<tr>
<td></td>
<td>Are they correct? Who thinks something else? etc.&lt;br&gt;Let's read the completed statement (inequalities from left to right and from right to left).</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td><strong>Missing numbers</strong>&lt;br&gt;Study these equations. What number can we write in the boxes to make them true?</td>
</tr>
<tr>
<td></td>
<td>BB:</td>
</tr>
<tr>
<td></td>
<td>a)</td>
</tr>
<tr>
<td></td>
<td>b)</td>
</tr>
<tr>
<td></td>
<td>c)</td>
</tr>
<tr>
<td></td>
<td>d)</td>
</tr>
<tr>
<td></td>
<td>Ps come to BB in pairs, one to write result above given side and the other to fill in missing number. Class points out errors.&lt;br&gt;If problems, Ps show numbers on class number line.</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td><strong>PbY3a, page 43</strong>&lt;br&gt;Read: Calculate the sums and differences. Elicit that there are $4 \times 3 = 12$ calculations (6 additions and 6 subtractions). Let's see how many you can do in 3 minutes! Start... now!... Stop! Review orally with whole class. Ps change pencils and mark/correct mistakes. Write difficult calculations on BB. Who had all 12 correct? Who made a mistake? What kind of mistake? etc.&lt;br&gt;Who notices a connection between some of them? (similar pairs, e.g. 94 + 8 and 135 + 8; 102 – 5 and 182 – 5; etc.)</td>
</tr>
<tr>
<td></td>
<td>Q.2</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td><strong>PbY3a, page 43</strong>&lt;br&gt;Read: Practise calculation.&lt;br&gt;Revise order of operations. Ps can write results above interim calculations if it will help them. Review at BB with whole class. Mistakes corrected. Who had them all correct? Who made 1 (2, 3, more than 3) mistakes? What kind of mistake, etc.&lt;br&gt;Ps point out similarities and connections.</td>
</tr>
</tbody>
</table>
### Y3

**Activity 9**

**PbY3a, page 37**

Q.4 Read: Write a plan, do the calculation, check the answer and write it as a sentence.

Revise standard units of measure (length, mass, capacity)

Deal with one problem at a time. Ps read problem and solve in Pbs. Review with whole class. Mistakes corrected.

#### a) Peter is 1 m 34 cm tall and Sarah is 8 cm taller. How tall is Sarah?

- **Plan:** Peter: 1 m 34 cm    Sarah: 1 m 34 cm + 8 cm
- **Calculation:** 1 m 34 cm + 8 cm = 1 m 42 cm
- **Check:** 1 m 42 cm – 8 cm = 1 m 34 cm
- **Answer:** Sarah is 1 m 42 cm tall.

#### b) A shop had 126 kg of apples in stock. This was 9 kg more than the amount of grapes in stock. How many kg of grapes were in the shop?

- **Plan:** Apples: 126 kg; Grapes: 126 kg – 9 kg
- **Calculation:** 126 kg – 9 kg = (126 – 6 – 3) kg = 117 kg
- **Check:** 117 kg + 9 kg = 126 kg
- **Answer:** 117 kg of grapes were in the shop.

#### c) There was 1 litre 50 cl of water in a jug. Another 50 cl of water was poured into the jug. How much water was in the jug then?

- **Plan:** At first: 1 litre 50 cl    Added: 50 cl
- **Calculation:** 1 litre 50 cl + 50 cl = 2 litres
  - or 1 and a half litres + half a litre = 2 litres
- **Check:** 2 litres – 50 cl = 1 litre 50 cl
- **Answer:** There was then 2 litres of water in the jug.

(Elicit that capacity of jug needs to be at least 2 litres, otherwise water would overflow!)

<table>
<thead>
<tr>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual work, monitored, helped</td>
</tr>
<tr>
<td>BB: 1 m = 100 cm</td>
</tr>
<tr>
<td>1 kg = 1000 g</td>
</tr>
<tr>
<td>1 litre = 100 cl</td>
</tr>
<tr>
<td>Reasoning, checking, agreement, self-correction, praising</td>
</tr>
<tr>
<td>or 134 cm + 8 cm = 140 cm</td>
</tr>
<tr>
<td>or 134 cm &lt; 140 cm</td>
</tr>
<tr>
<td>or 126 kg &gt; 117 kg</td>
</tr>
<tr>
<td>(= 1 litre + 1 litre)</td>
</tr>
<tr>
<td>or 150 cl &lt; 200 cl</td>
</tr>
<tr>
<td>Extra praise if Ps think of this by themselves.</td>
</tr>
</tbody>
</table>

__45 min__
**Lesson Plan**

**Y3**

**Activity**

1. **Secret number**
   - I am thinking of a number. Try to find out what it is by asking me questions but I can answer only 'yes' or 'no'.
   - e.g. 151: Is it 2-digit? (No) Is it 3-digit? (Yes) Is it even? (No) Is its hundreds digit more than 1? (No) Is it less than 150? (No) Is it more than 175? (No) Is its tens digit more than 5? (No) Is it less than 155? (Yes) Are it hundreds and units digits the same? (Yes) It is 151. (Yes)
   - If Ps deduce it quickly, repeat for another number. (Ps' choice)

   **5 min**

2. **Multiplication** (2, 4, 8)
   - Study this table. Who can explain to us what we have to do?
     - 2nd row: multiply numbers in top row by 2;
     - 3rd row: multiply numbers in top row by 4;
     - 4th row: multiply numbers in top row by 8)
   - T chooses Ps and squares at random. P dictates what T should write, saying the complete multiplication. Class points out errors.
     - (e.g. 8 × 15 = 8 × 10 + 8 × 5 = 80 + 40 = 120;)
   - Ps use easier products to help with difficult numbers.
     - (e.g. 8 × 15 = 8 × 10 + 8 × 5 = 80 + 40 = 120;)
   - Solution:

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>20</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>4</td>
<td>8</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
<td>28</td>
<td>32</td>
<td>36</td>
<td>40</td>
<td>60</td>
<td>80</td>
</tr>
<tr>
<td>8</td>
<td>0</td>
<td>8</td>
<td>16</td>
<td>24</td>
<td>32</td>
<td>40</td>
<td>48</td>
<td>56</td>
<td>64</td>
<td>72</td>
<td>80</td>
<td>120</td>
<td>160</td>
</tr>
</tbody>
</table>

   - What else do you notice about the rows? (e.g. the numbers in the row of 8s are 4 times more than those in the row of 2s and 2 times more than those in the row of 4s; the numbers in the row of 4s are 2 times those in the row of 2s)
   - T says multiplications and divisions from the table. Ps give product or quotient, using the table to help them if necessary.

   **10 min**

3. **PbY3a, page 44**
   - Q.1 Read: **Write operations about the picture.**
     - Elicit that there are 13 shapes, each made from 7 squares, so 7 × 13 = 7 × 10 + 7 × 3 = 70 + 21 = 91 squares altogether
     - Review at BB with whole class. A, come and show us what you wrote. Who did the same? Who wrote something else?
     - Accept additions, subtractions, multiplications and divisions.
       - e.g. 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = 91
       - 91 − 7 = 7 − 7 = 7 = 7 × 11 + 7 = 7
       - 7 × 13 = 13 × 7 = 91; 91 ÷ 7 = 13, 91 ÷ 13 = 7
     - Let's complete the multiplication table of 7.

   **BB:**

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0</td>
<td>7</td>
<td>14</td>
<td>21</td>
<td>28</td>
<td>35</td>
<td>42</td>
<td>49</td>
<td>56</td>
<td>63</td>
<td>70</td>
<td>105</td>
<td>140</td>
</tr>
</tbody>
</table>

   - T asks multiplications and divisions from the table.

   **16 min**

**Notes**

- Whole class activity
  - Encourage Ps to ask logical questions and keep in mind clues already given.
  - Encourage different types of questions.
  - Praise creativity
  - P can answer the questions

- Whole class activity
  - Drawn on BB or use enlarged copy master or OHP
  - At a good pace
  - Reasoning, agreement, praising
  - Leave last 2 columns until the end.

- Agreement, praising
  - Orally round class at speed
  - Ps can ask questions too.

- Individual work, monitored, helped
  - Drawn on BB or use enlarged copy master or OHP
  - Deal with all responses.
  - Reasoning, agreement, self-correcting, praising

- Whole class activity
  - Ps dictate products to T
  - BB: 7 × 15 = 7 × 10 +
  - 7 × 5 = 70 + 35 = 105
  - T chooses Ps at random.
  - At speed. Praising
**Y3**

**Activity 4**

*PbYa, page 44*

Q.2 Read: *Complete the table.*

What do you notice about this table? (Columns could be inserted after '10' in previous table. Columns for 15 and 20 have already been done on BB.)

Remind Ps about easy ways of calculating using known products, e.g. $8 \times 19 = 8 \times 10 + 8 \times 9 = 80 + 72 = 152$

(or $8 \times 19 = 8 \times 20 - 8 \times 1 = 160 - 8 = 152$)

Let's see how much of the table you can complete in 4 minutes!

Review at BB with whole class. Ps read out the multiples in each row in unison. Mistakes corrected. Ps explain how they obtained the difficult products. (BB)

**Solution:**

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
<th>d</th>
<th>e</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>11</td>
<td>24</td>
<td>48</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>26</td>
<td>52</td>
<td>96</td>
<td>84</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
<td>28</td>
<td>60</td>
<td>104</td>
<td>91</td>
</tr>
<tr>
<td>8</td>
<td>14</td>
<td>30</td>
<td>64</td>
<td>112</td>
<td>98</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>32</td>
<td>68</td>
<td>120</td>
<td>105</td>
</tr>
<tr>
<td>12</td>
<td>16</td>
<td>34</td>
<td>72</td>
<td>128</td>
<td>112</td>
</tr>
<tr>
<td>14</td>
<td>17</td>
<td>36</td>
<td>76</td>
<td>136</td>
<td>119</td>
</tr>
<tr>
<td>16</td>
<td>18</td>
<td>38</td>
<td>80</td>
<td>144</td>
<td>126</td>
</tr>
<tr>
<td>18</td>
<td>19</td>
<td>40</td>
<td></td>
<td>152</td>
<td>133</td>
</tr>
</tbody>
</table>

T asks divisions from the table. Ps use table to help them answer. **23 min**

---

**Problem 1**

Listen carefully to this problem. For each part, do the calculation in your Ex. Bks and show me the answer when I say.

I have 160 sweets. *How many will each child get if I share the sweets equally among:*

<table>
<thead>
<tr>
<th></th>
<th>a) 2 children</th>
<th>b) 4 children</th>
<th>c) 8 children</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB</td>
<td>160 ÷ 2 = 80</td>
<td>160 ÷ 4 = 40</td>
<td>160 ÷ 8 = 20</td>
</tr>
<tr>
<td>Check</td>
<td>2 × 80 = 160</td>
<td>4 × 40 = 160</td>
<td>8 × 20 = 160</td>
</tr>
</tbody>
</table>

For each part, P who answered correctly explains to Ps who did not. **26 min**

---

**Problem 2**

Listen carefully to the problem and do the calculations in your Ex. Bks. Show me the answer when I say.

I have 82 marbles. *I want to put the marbles in bags so that each bag has the same number of marbles. How many bags will I need if in each bag I put:*

<table>
<thead>
<tr>
<th></th>
<th>a) 4 marbles</th>
<th>b) 8 marbles</th>
<th>c) 7 marbles</th>
</tr>
</thead>
<tbody>
<tr>
<td>BB</td>
<td>82 ÷ 4 = 20, r 2.</td>
<td>82 ÷ 8 = 10, r 2.</td>
<td>82 ÷ 7 = 11, r 5.</td>
</tr>
<tr>
<td>Check</td>
<td>4 × 20 + 2 = 80 + 2 = 82</td>
<td>8 × 10 + 2 = 80 + 2 = 82</td>
<td>7 × 11 + 5 = 77 + 5 = 82</td>
</tr>
</tbody>
</table>

For each part, P who answered correctly explains to Ps who did not. **30 min**

---

**Notes**

- Individual work, monitored
- Drawn on BB or use enlarged copy master or OHP
- Ps can do difficult calculations in Ex Bks
- Discussion, reasoning, agreement, self-correction, praising
- Liken rows to sequences increasing by 2 (4, 8, 7)
  - e.g. $4 \times 16 = 4 \times 2 \times 8 = 8 \times 8 = 64$
- Label the rows $a, b, c, d, e$ and discuss connections between them, e.g. $2 \times b = c$, $4 \times b = d$, $d - e = a$ (e.g. 104 – 13 = 91)
- Orally, at speed round class

---

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**Lesson Plan 44**

### Activity

**7**

**Problems**

Listen carefully to these problems. I will read each one twice. When I read it the second time, write down the data in your Ex. Bks.

Do the calculation, check it and show me the answer when I say.

a) *Ella has 8 books, 1 seventh of the number of books that Flora has. How many books does Flora have?*

Show me... now! (56)

_B_: how did you get your answer? Who agrees? etc.

BB: E: 8 books, F: \(7 \times 8\) books = 56 books

*Answer:* Flora has 56 books.

b) *Bob has 8 postcards and 1 eighth of them are from the USA. How many postcards are from the USA?*

Show me... now! (1)

_C_: how did you get your answer? Who agrees? etc.

BB: Postcards: 8, USA: 8 postcards \(\div 8\) = 1 postcard

*Answer:* 1 postcard is from the USA.

Discuss '8' as being a fraction (1 eighth) in part a) and the total (whole) in part b). (Ps can suggest similar problems using own contexts.)

---

**8**

_Pby3a, page 44_

**Q.3** Read: *Practise multiplication and division.*

How many calculations are there? (4 \(\times\) 3 = 12; 6 multiplications and 6 divisions).

Let's see how many you can do in 3 minutes! Start... now!... Stop!

Review orally round class. Ps change pencils. Mistakes corrected. Who had 12 (11, 10, less than 10) correct? What were your mistakes? Who did the same? etc.

Discuss similarities and connections, e.g.

- if either factor (or multiplicand and multiplier) is 10 times more, then the product will be 10 times more;
- if the dividend is 10 times more, the quotient will be 10 times more;
- if the dividend and the divisor are 10 times more, the quotient will stay the same.

---

**9**

_Pby3a, page 44, Q.4_

Read: *Fill in the missing numbers.*

Elicit that there are 3 \(\times\) 5 = 15 calculations, (10 multiplications and 5 divisions). Revise how to calculate missing factors (divisors, dividends).

Do orally, with T choosing Ps. P says the multiplication (division) and checks with the reverse operation (division, multiplication).

_e.g._ \(6 \times 3 = 18\), because \(18 \div 6 = 3\); \(36 \div 4 = 9\), because \(9 \times 4 = 36\)

T occasionally asks Ps which number is the product (multiplicand, multiplier, dividend, divisor, quotient).

---

Notes

Individual work, monitored (with number cards or written on scrap paper)
P repeats in own words
In unison
Reasoning, agreement, self-correction, praising

_T reads and P repeats in own words_ In unison
Reasoning, agreement, self-correction, praising
Feedback for T Discussion, agreement, praising

Individual work, monitored
Keep to time limit
Discussion, agreement, self-correction, evaluation, praising
Feedback for T
Encourage Ps to use the names of the components
T consolidates with other examples if necessary

Whole class activity
Initial discussion/revision
Differentiation by question
At a good pace
Encourage Ps to speak out
Agreement, checking, praising
Feedback for T
(Or done as individual work)

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<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
</table>
| Tables practice, revision, activities, consolidation  
*PbY3a. page 45* |       |
**Lesson Plan**

**46**

**Y3**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Missing numbers</td>
<td>Whole class activity&lt;br&gt;Drawn on BB or use enlarged copy master or OHP&lt;br&gt;Bold numbers are given&lt;br&gt;At a good pace&lt;br&gt;Reasoning, agreement, praising&lt;br&gt;Ps read out numbers in towers in decreasing order. ‘191, 190, 177, 174, 173, 156’</td>
</tr>
<tr>
<td>Follow the arrows and fill in the missing numbers and signs. BB:</td>
<td></td>
</tr>
<tr>
<td>Ps come out to BB to fill in missing items, explaining how they did the calculation. Class agrees/disagrees. Write difficult calculations on BB: e.g.</td>
<td></td>
</tr>
<tr>
<td>156 + 17 = 156 + 10 + 7 = 166 + 7 = 173, or 156 + 17 = 156 + 7 + 10 = 163 + 10 = 173 190 – 156 = 190 – 150 – 6 = 40 – 6 = 34</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong> Puzzle</td>
<td>Whole class activity&lt;br&gt;Drawn on BB or use enlarged copy master&lt;br&gt;Bold numbers are given&lt;br&gt;At a good pace&lt;br&gt;Reasoning, agreement, praising&lt;br&gt;BB: 160 78 82 43 35 47 26 17 18 29</td>
</tr>
<tr>
<td>What do you think the rule of this puzzle could be? Ask several Ps what they think. (Sum of any two adjacent numbers is the number directly above them.)</td>
<td></td>
</tr>
<tr>
<td>Ps come out to BB to fill in numbers, explaining reasoning and writing relevant addition on BB. Class agrees/disagrees. BB: e.g. 160 = 78 + 82 or 160 – 78 = 82 (160 – 60 – 10 – 8)</td>
<td></td>
</tr>
<tr>
<td><strong>3</strong> Inequality</td>
<td>Whole class activity&lt;br&gt;Use enlarged copy master or OHP, or cards enlarged, cut out and stuck to BB&lt;br&gt;Relevant segment of number line drawn on BB&lt;br&gt;In unison&lt;br&gt;Reasoning, agreement, praising&lt;br&gt;BB: 172 + 14 = 186 &gt; 185 190 – 15 = 175 &lt; 185 179 + 7 = 186 172 &gt; 180 ≤ 185 175 182 186 185 180 ≤ 185 182 186 175 179 + 7 190 – 15 172 + 14 180 + 40 + 65 145 + 35 180 186 175 182 180</td>
</tr>
<tr>
<td>Study the diagram. Which of the cards should not be there? BB:</td>
<td>Let’s read the inequality, starting from the rectangle: ‘the rectangle is greater than or equal to 180 and less than or equal to 185’.</td>
</tr>
<tr>
<td>A. come and point to 180 and 185 on the number line. Read out the numbers the rectangle could be. (180, 181, 182, 183, 184, 185) Ps come to BB to remove (or cross out) cards which do not belong and check by doing calculations on BB. Class agrees or disagrees.</td>
<td></td>
</tr>
<tr>
<td><strong>4</strong> Addition</td>
<td>Whole class activity&lt;br&gt;Encourage Ps to notice connections which make the calculations easier&lt;br&gt;Reasoning, agreement, praising&lt;br&gt;BB: e.g. 35 + 87 = 35 + 7 + 80 = 42 + 80 = 122</td>
</tr>
<tr>
<td>T has BB or SB or OHP already prepared:</td>
<td></td>
</tr>
<tr>
<td>a) 35 + 62 = 97 35 + 82 = 117 35 + 83 = 120 35 + 87 = 122</td>
<td></td>
</tr>
<tr>
<td>b) 24 + 53 = 77 24 + 93 = 117 24 + 96 = 120 24 + 98 = 122</td>
<td></td>
</tr>
<tr>
<td>c) 46 + 33 = 79 46 + 63 = 109 46 + 64 = 110 46 + 69 = 115</td>
<td></td>
</tr>
<tr>
<td>Ps come to BB to fill in results, explaining how they did the calculation. Discuss relationships and similarities. Write details of calculations on BB if necessary. Show one or two on class number line.</td>
<td></td>
</tr>
</tbody>
</table>

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## MEP: Feeder Primary Project

### Y3

#### Activity

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5</strong></td>
<td><strong>98 – 57 = 41</strong>&lt;br&gt;<strong>198 – 57 = 141</strong>&lt;br&gt;<strong>128 – 57 = 71</strong>&lt;br&gt;<strong>125 – 57 = 68</strong>&lt;br&gt;<strong>84 – 36 = 48</strong>&lt;br&gt;<strong>184 – 36 = 148</strong>&lt;br&gt;<strong>124 – 32 = 92</strong>&lt;br&gt;<strong>124 – 36 = 88</strong>&lt;br&gt;<strong>75 – 48 = 27</strong>&lt;br&gt;<strong>175 – 48 = 127</strong>&lt;br&gt;<strong>135 – 45 = 90</strong>&lt;br&gt;<strong>135 – 48 = 87</strong>&lt;br&gt;T has BB or SB or OHP already prepared:&lt;br&gt;a) 98 – 57  = 198 – 57  = 124 – 32  = 124 – 36  = 71  = 88&lt;br&gt;b) 84 – 36 = 184 – 36 = 124 – 32 = 124 – 36 = 48  = 88&lt;br&gt;c) 75 – 48 = 175 – 48 = 135 – 45 = 135 – 48 = 27  = 87&lt;br&gt;Ps come to BB to fill in results, explaining how they did the calculation.&lt;br&gt;Discuss relationships and similarities. Write details of calculations on BB if necessary. Show one or two on class number line.</td>
<td><strong>Notes</strong>&lt;br&gt;Whole class activity&lt;br&gt;Encourage Ps to notice connections which make the calculations easier.&lt;br&gt;Reasoning, agreement, praising&lt;br&gt;BB: e.g. 124 – 36 = 124 – 30 – 6 = 94 – 6 = 88</td>
</tr>
</tbody>
</table>
Activity 8  
**PbY3a, page 46**  
Q.3 Read: The sum of any two adjacent numbers is the number directly above them.  
The numbers in the bottom row increase by 4. Fill in the missing numbers.  
Where should you start? (on bottom row, then work vertically)  
Review at BB with whole class. Ps come out to BB to write in their numbers, explaining reasoning. Class agrees/disagrees. Mistakes corrected.  
Compare calculation methods used.  
40 min

<table>
<thead>
<tr>
<th>192</th>
<th>80</th>
<th>112</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>48</td>
<td>64</td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>28</td>
</tr>
<tr>
<td>36</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>16</td>
<td>20</td>
</tr>
</tbody>
</table>

PbY3a, page 46, Q.4  
Read: Fill in the numbers missing from the magic square. The sums of the numbers in each row, column or diagonal are equal.  
Where do you think we should start? (At the diagonal which has all 4 numbers given so that we can find out what each sum is.)  
X, come and write the addition on the BB. Who agrees with the sum? Who thinks it should be something else? etc.  
BB: e.g. \(5 + 35 + 65 + 95 = 95 + 5 + 65 + 35 = 100 + 100 = 200\)  
What should we do next? e.g. \(5 + 89 + + 23 = 200\)  
BB: e.g. \(200 - 5 - 89 - 23 = 195 - 90 - 22 = 105 - 22 = 83\)  
or \(200 - (5 + 89 + 23) = 200 - (94 + 23) = 200 - 117 = 83\)  
Continue in this way, with Ps coming to BB to choose a row or column and to write the calculation on the BB.  
45 min

<table>
<thead>
<tr>
<th>5</th>
<th>89</th>
<th>83</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>35</td>
<td>41</td>
<td>53</td>
</tr>
<tr>
<td>47</td>
<td>59</td>
<td>65</td>
<td>29</td>
</tr>
<tr>
<td>77</td>
<td>17</td>
<td>11</td>
<td>95</td>
</tr>
</tbody>
</table>

Notes

Individual work, monitored, helped  
Drawn on BB or use enlarged copy master or OHP  
Reasoning, agreement, self-correcting, praising

Solution:

Whole class activity  
Drawn on BB or use enlarged copy master or OHP  
Ps suggest where to start and what to do next  
Reasoning, agreement, praising  
Ps suggests easy methods of doing calculations.

Solution:

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## Y3  Lesson Plan

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<th>Activity</th>
<th>Notes</th>
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</thead>
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<tr>
<td><strong>1</strong></td>
<td><strong>Order of operations and brackets</strong></td>
</tr>
<tr>
<td><strong>R:</strong> Mental calculation</td>
<td><strong>Lesson Plan</strong></td>
</tr>
<tr>
<td><strong>C:</strong> Numbers up to 500</td>
<td><strong>47</strong></td>
</tr>
</tbody>
</table>

### Brackets 1
Listen carefully, picture the story in your head, then think about how you would do the calculation with, and without, brackets.

**Judith bought a bar of chocolate for 86 p in one shop, then went into another shop and bought a notebook for 60 p and a matching pencil for 20 p. How much did Judith spend altogether?**

- **A**, come and write the calculation **with** brackets.
  
  BB: $86 \text{p} + (60 \text{p} + 20 \text{p}) = 86 \text{p} + 80 \text{p} = £1.66$

- **B**, come and write the calculation **without** brackets.
  
  BB: $86 \text{p} + 60 \text{p} + 20 \text{p} = 146 \text{p} + 20 \text{p} = £1.66$

Are they correct? Who thinks something else? etc.

What do you notice? (results are the same)

If we rub out the brackets, will it change the result? (No)

Elicit that in this calculation brackets can be removed.

### Brackets 2
Listen carefully, picture the story in your head, then think about how you would do the calculation with, and without, brackets.

**A shop had 235 kg of potatoes in stock. 170 kg of potatoes were sold and 3 kg went bad and had to be thrown out. How many kgs of potatoes were left in the shop?**

- **C**, come and write the calculation **without** brackets.
  
  BB: $235 \text{kg} - 170 \text{kg} - 3 \text{kg} = 65 \text{kg} - 3 \text{kg} = 62 \text{kg}$

- **D**, come and write the calculation **with** brackets.
  
  BB: $235 \text{kg} - (170 \text{kg} + 3 \text{kg}) = 235 \text{kg} - 173 \text{kg} = 62 \text{kg}$

Are they correct? Who thinks something else? etc.

What do you notice? (results are the same)

If we rub out the brackets, will it change the result? (Yes)

Let's check. BB: $235 \text{kg} - 170 \text{kg} + 3 \text{kg} = 65 \text{kg} + 3 \text{kg} = 68 \text{kg}$

Elicit that in this calculation the brackets **cannot** be removed.

### Order of operations 1
Let's help *Dizzie Domble* with his calculations. Which should he do first?

Ps come to BB to point to the operation(s) which should be done first and write the interim results above the signs. Class agrees/disagrees.

Where relevant, discuss whether the brackets can be removed or not.

**BB:**

<table>
<thead>
<tr>
<th>bb</th>
<th>a) $120 + 3 \times 20 + 6 \div 2 = 120 + 100 + 3 = 223$ (multiplication, then division)</th>
<th>b) $(110 + 20) \times 2 = 130 \times 2 = 360$ (brackets first)</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>c) $110 + 20 \times 2 = 110 + 40 = 150$ (multiplication first)</td>
<td>d) $(160 - 40) \div 2 + 10 = 120 + 2 + 10 = 60 + 10 = 70$ (brackets, then division)</td>
</tr>
<tr>
<td>130</td>
<td>e) $240 - 20 + 160 = 220 + 160 = 380$ (subtraction first)</td>
<td>f) $(240 - 20) + 160 = 220 + 160 = 380$ (brackets first, removable)</td>
</tr>
<tr>
<td>220</td>
<td>g) $240 - (20 + 160) = 240 - 180 = 60$ (brackets first, not removable)</td>
<td></td>
</tr>
</tbody>
</table>

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**Y3**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4</strong> Order of operations 2</td>
<td>Lesson Plan 47</td>
</tr>
</tbody>
</table>

*Dizzie Domble* has done his homework in a hurry and has gone out to play. Let's mark what he has done!

Ps come to BB to mark each calculation with a tick or cross and to correct mistakes, explaining reasoning. Class agrees/disagrees.

BB:

1. What mark would *Dizzie Domble* have got for his homework? (4/6)

25 min

**5** Sequence competition

I will say the first few terms of a sequence and you must continue it for as many terms as you can in your *Ex. Bks*. You must start and stop when I say.

a) **30, 45, 60, 75,** (90, 105, 120, 135, 150, 165, 180, 195, 210, 225, 240, 255, 270, 285, 300, 315, 330, 345, 360, 375, 390, 405 

b) **500, 470, 440, 410,** (380, 350, 320, 290, 260, 230, 200, 170, 140, 110, 80, 50, 20, (– 10, – 40, – 70, – 100, – 130, – 160, 


Individual work, monitored

Review orally with the whole class:

Ps stand up, then list the terms one after the other. Ps sit down if they make a mistake or reach the end of their list.

Class applauds the winner(s). Stars (stickers, etc.) awarded

25 min

**6** *PbY3a, page 47*

Q.1 Read: Write the calculation without brackets so that the result is the same.

Ps first calculate result of given equations, then write calculations without brackets and check that result is the same.

**Solution:**

a) \( 128 + (30 + 5) = 163 = 128 + 30 + 5 \)

b) \( 127 – (50 + 1) = 76 = 127 – 50 – 1 \)

c) \( 146 – (90 – 16) = 72 = 146 – 90 + 16 \)

d) \( (50 – 7) \times 3 = 129 = 50 \times 3 - 7 \times 3 \)

e) \( (160 + 8) \div 8 = 21 = 160 \div 8 + 8 \div 8 \)

Let's try the same thing with these two calculations.

BB: f) \( 80 \div (10 - 2) \) g) \( 48 \div (2 + 4) \)

Elicit that in both cases, the only way to write without brackets is:

\( 80 \div 8 = 10 \) \( 48 \div 6 = 8 \)

Individual work, monitored, helped

(or whole class activity if T thinks Ps need more help)

T has given part of equations written on BB or SB or OHP

Discuss, reasoning, agreement, checking, self-correcting, praising

T points out that Ps should take care in expanding brackets where there is subtraction or division, and always check result.

Whole class discussion

Ps suggest what to do, then check results.

as: \( 80 \div 10 – 80 \div 2 \neq 10 \)

\( \frac{8}{2} + \frac{48}{4} \neq 8 \)

30 min

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**Y3**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Lesson Plan 47</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td><strong>PbY3a, page 47</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Q.2 Read: Calculate.</strong> Deal with one part at a time. Ps fill in missing results in Pbs. Review orally round class. Mistakes corrected. What do you notice about the calculations? Ps point out relationships, e.g. $20 \times 6 &gt; 20 \times (6 - 1)$ and $20 \times 6 &lt; 20 \times (6 + 2)$ $160 \div (8 \times 2) &lt; 160 \div 8 &lt; 160 \div (8 \div 2)$, etc.</td>
</tr>
<tr>
<td></td>
<td><strong>Notes</strong> Individual work, monitored Reasoning, agreement, checking, self-correcting, praising Write problem calculations on BB Discussion. Involve several Ps T gives hints if nobody notices</td>
</tr>
<tr>
<td></td>
<td><strong>35 min</strong></td>
</tr>
</tbody>
</table>

| 8        | **PbY3a, page 47** |
|          | **Q.3 Read: Fill in the results and colour the matching sections to find the hidden number.** T explains task at BB. Ps do the calculations, check them and colour appropriate sections in the diagram. Show me the number you have coloured... now! (35) Ps who have responded incorrectly dictate their results. Class points out when errors are made and Ps correct them. **Solution:** |
|          | **Notes** Individual work, monitored, helped Drawn/written on BB or use enlarged copy master or OHP In unison (with number cards or written on scrap paper) Reasoning, agreement, checking, self-correcting, praising Write details of calculations on BB if problems (Or done as a whole class activity, with Ps coming to BB to calculate and colour) |
|          | **40 min** |

| 9        | **PbY3a, page 47, Q.4** |
|          | **Read: Write calculations in two ways, with and without brackets.** Deal with one problem at a time. P reads out problem and other Ps repeat in own words. T elicits important data. Ps suggest two ways of calculating. Show details on BB. Class checks results are the same. |
|          | **Lessons** Whole class activity (or individual work if Ps wish) Discussion, reasoning, agreement, checking, praising Ps dictate to T or come out to write on BB Elicit that: $56 \div (7 - 3) \neq 56 \div 7 - 3$ BB: $56 \div 4 = 40 \div 4 + 16 \div 4 = 10 + 4 = 14$ Discuss what should be written as a comprehensive answer BB: £1.50 p = £1.50 = 150 p |
|          | **Answer:** a) Seven children went to gather chestnuts. They gathered 56 kg. Three of the children just played and did not collect any. Share the chestnuts equally among the children who collected them. How many chestnuts will each child take home? **Data:** 7 children, 3 children played, 56 kg of nuts collected **Calculations:** 1) $56 \div (7 - 3) = 56 \div 4 = 14$ kg 2) $7 - 3 = 4; 56 \div 4 = 14$ kg **Answer:** 4 children will each take home 14 kg of chestnuts, and 3 children will take home no chestnuts. b) Steve had £1.50 p. The 6 members in Steve's gang spent £1.80 p altogether on sweets. Each paid the same amount. **How much did Steve have left?** **Data:** Steve had £1.50 = 150 p, 6 boys spent £1.80 = 180 p **Calculations:** 1) $150 p - (180 p \div 6) = 150 p - 30 p = 120 p$ 2) $150 p \div 6 = 30 p; 150 p - 30 p = 120 p$ **Answer:** Steve had £1.20 left. |
Y3

<table>
<thead>
<tr>
<th>Activity</th>
<th>Lesson Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td><strong>Competition</strong></td>
<td>Whole class activity</td>
</tr>
<tr>
<td>T has numbers stuck to side of BB and BB divided by a horizontal line into two parts. Which of these numbers are multiples of 8? BB: e.g.</td>
<td>(T can have another set of numbers on back of cards in case Ps are very quick and there is time for another game.)</td>
</tr>
<tr>
<td><strong>Multiples of 8</strong></td>
<td><strong>At speed</strong></td>
</tr>
<tr>
<td>18 88</td>
<td>Discussion on how to check: e.g. 27 is an odd number, 100 = 80 + 20 = 80 + 16 + 4 or 100 ÷ 8 = 12, r 4</td>
</tr>
<tr>
<td>160 100</td>
<td>150 = 80 + 70 = 80 + 64 + 4 or 150 ÷ 8 = 18, r 4 so are not multiples of 8</td>
</tr>
<tr>
<td>27 64</td>
<td>'3 cheers' for winning team</td>
</tr>
<tr>
<td>400 150</td>
<td></td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
</tr>
<tr>
<td>88 160 64 400</td>
<td></td>
</tr>
<tr>
<td>18 100 27 150</td>
<td></td>
</tr>
<tr>
<td>T chooses 2 teams of 4 Ps each (e.g. girls v boys) and tosses a coin to decide which team chooses their heading ('Multiples of 8' or 'Others'). T says 'Start' and one P after another in each team runs to BB to choose a card and put in appropriate place Next P must wait until previous P sits down before leaving desk. If a P from the other team recognises a mistake, they can take the card from other team's half and stick in their own. Team with most correct numbers after 2 minutes is the winner. Rest of class checks whether numbers are correct.</td>
<td></td>
</tr>
<tr>
<td><strong>5 min</strong></td>
<td></td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Whole class activity</td>
</tr>
<tr>
<td><strong>Equal values</strong></td>
<td>Drawn on BB or use enlarged copy master or OHP (or copy master enlarged, cut out and items stuck to BB)</td>
</tr>
<tr>
<td>Which key can open which padlock? BB: A 70 ÷ 10</td>
<td>At a good pace</td>
</tr>
<tr>
<td>B 81 ÷ 9</td>
<td>Reasoning, agreement, praising</td>
</tr>
<tr>
<td>C 120 ÷ 30</td>
<td>BB: e.g.</td>
</tr>
<tr>
<td>D 150 ÷ 50</td>
<td>150 ÷ 50 = 15 tens ÷ 5 tens</td>
</tr>
<tr>
<td>E 55 ÷ 11</td>
<td>= 3 tens = 30</td>
</tr>
<tr>
<td>F 68 ÷ 34</td>
<td>68 = 34 + 34 = 2 × 34</td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Ps come out to BB to join up keys to padlocks, explaining reasoning. Write details of problem calculations on BB. Class points out errors.</td>
<td></td>
</tr>
<tr>
<td><strong>10 min</strong></td>
<td></td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Individual work, monitored</td>
</tr>
<tr>
<td><strong>PbY3a, page 48</strong></td>
<td>BB: 1 cm = 10 mm</td>
</tr>
<tr>
<td>Q.1 Read: Fill in the missing quantities. Revise standard units of length. What is the rule of the table? (In each column, value in top row + value in bottom row = 1 m.) Ps write missing values in table in Pbs and check that each column adds up to 1 metre. Review at BB with whole class. Mistakes discussed/corrected.</td>
<td>1 m = 100 cm = 1000 mm</td>
</tr>
<tr>
<td><strong>Solution:</strong></td>
<td>Table drawn on BB or use enlarged copy master or OHP</td>
</tr>
<tr>
<td>1 metre 30 cm</td>
<td>Initial discussion on rule</td>
</tr>
<tr>
<td>70 cm</td>
<td>Reasoning, agreement, self-correction, praising</td>
</tr>
<tr>
<td>half a metre 600 mm</td>
<td></td>
</tr>
<tr>
<td>50 cm</td>
<td>Class agrees/disagrees. Praising</td>
</tr>
<tr>
<td>25 cm</td>
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<tr>
<td>8 cm 75 cm</td>
<td></td>
</tr>
<tr>
<td>92 cm</td>
<td></td>
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<tr>
<td>500 mm 90 cm</td>
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<tr>
<td>500 mm</td>
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<td>400 mm</td>
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<tr>
<td>2</td>
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<tr>
<td>15 min</td>
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</tbody>
</table>
### Lesson Plan 48

#### Activity

4. **Puzzle**

What can the rule be? Ask several Ps what they think.

**Rule:** Outer number in each segment is 3 times the inner number.

Ps come to BB to fill in a missing number, explaining reasoning. Class agrees/disagrees. Write details of problem calculations on BB.

**Solution:**

BB: e.g.

$$3 \times 80 = 80 + 80 + 80 = 240,$$

$$3 \times 80 = 3 \times 8 \text{ tens} = 24 \text{ tens} = 240$$

$$150 \div 3 = 15 \text{ tens} \div 3 = 5 \text{ tens} = 50$$

etc.

![Diagram with numbers and calculations]

---

5. **Sequences**

Let's continue this sequence in different ways. T writes on BB: 1, 2, 4,

Ps suggest other ways to continue it and give the rule in each case.

T writes on BB what Ps dictate. e.g.

- **P1:** 1, 2, 4, 7, 11, 16, 22, 29, 37, 46, 56, 67, . . .
- **P2:** 1, 2, 4, 1, 2, 4, 1, 2, 4, . . .
- **P3:** 1, 2, 4, 2, 1, 2, 4, 2, 1, . . .
- **P4:** 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, . . . (2 × previous term)

---

6. **PbY3a, page 48**

**Q.2 a)** Read: *Add up the first 10 positive whole numbers.*

Quick review with whole class.

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$$

**b)** Read: *Find an easier way to do the calculation, using the diagram to help you.*

Let Ps try without help for 2 minutes. Who has thought of an easy way of doing it? Ask several Ps what they think.

If nobody suggests anything anything, T demonstrates.

Show on diagram that:

$$10 + 1 = 11, 9 + 2 = 11, 8 + 3 = 11, 7 + 4 = 11, 6 + 5 = 11$$

i.e. $$11 + 11 + 11 + 11 + 11 = 5 \times 11 = 55$$

If a P suggest using both sets of numbers, 1 to 10 and 10 to 1, then the calculations would be:

$$(1 + 10 + 2 + 9 + 3 + 8 + 4 + 7 + 5 + 6 + 5 + 7 + 4 + 8 + 3 + 9 + 2 + 10 + 1) \div 2 = (10 \times 11) \div 2 = 110 \div 2 = 55$$

(Ps could use number strips, Cuisennaire rods or multilink cubes if necessary.)

---

**Notes**

- Whole class activity
  - Drawn on BB or use enlarged copy master or OHP
  - Discussion, agreement on rule

- At a good pace
  - Reasoning, agreement, praising
  - Show different methods of calculation

- Individual work
  - Ps dictate what T should write.
  - Discussion, agreement on rule

- Individual trial first, then whole class discussion
  - Drawn on BB or use enlarged copy master or OHP
  - Reasoning, agreement, praising all ideas

**BB:**

```
  1  10
  2  9
  3  8
  4  7
  5  6
  6  5
  7  4
  8  3
  9  2
 10  1
```
**Y3**

**Activity**

7

_PbY3a, page 48_

Q.3 Read: _Continue the sequences by writing the next 6 terms. What is the rule?_

Ps can do drawings in _Ex. Bks_ to help them if necessary.

Review at BB with whole class. **A**, what numbers did you write? What rule did you use? Who wrote another rule? etc.

_Solution:_

- **a)** 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, . . .  
  _Rule:_ increasing by 2, or the odd numbers
- **b)** 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, . . .  
  _Rule:_ $1 	imes 1$, $2 	imes 2$, $3 	imes 3$, $4 	imes 4$, . . .  
  or the square numbers

Why do you think they are called square numbers?

---

8

_PbY3a, page 48_

Q.4 Read: _Fill in the numbers missing from the number strips._

Who can tell us what we should do? (Find two adjacent terms and calculate the difference between them. Then use this to fill in the missing terms.)

Deal with one part at a time. For each part, elicit rule, then Ps fill in numbers in _Pbs_. Review at BB with whole class.

Deal with all mistakes. Ps say how they did the calculations.

_Solution:_

- **a)**  
  
<table>
<thead>
<tr>
<th>85</th>
<th>91</th>
<th>101</th>
<th>109</th>
<th>117</th>
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<th>133</th>
<th>141</th>
<th>149</th>
<th>157</th>
<th>165</th>
<th>173</th>
<th>181</th>
<th>189</th>
<th>197</th>
<th>205</th>
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</thead>
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</tbody>
</table>

- **b)**  
  
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<tr>
<th>200</th>
<th>183</th>
<th>176</th>
<th>164</th>
<th>152</th>
<th>140</th>
<th>128</th>
<th>116</th>
<th>104</th>
<th>92</th>
<th>80</th>
<th>68</th>
<th>56</th>
<th>44</th>
<th>32</th>
<th>20</th>
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</tbody>
</table>

- **c)**  
  
<table>
<thead>
<tr>
<th>121</th>
<th>130</th>
<th>139</th>
<th>148</th>
<th>157</th>
<th>166</th>
<th>175</th>
<th>184</th>
<th>193</th>
<th>202</th>
<th>211</th>
<th>220</th>
<th>229</th>
<th>238</th>
<th>247</th>
<th>256</th>
</tr>
</thead>
<tbody>
<tr>
<td>+9</td>
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</tbody>
</table>

Let’s continue the sequences.

---

9

_PbY3a, page 48, Q.5_

Read: _Continue the sequences and write the rules._

Deal with one part at a time. Give Ps a minute to work out the rule.

Class stands up. Ps continue sequence orally.

If a P makes a mistake, he/she sits down and next P says it correctly.

  
  Who can tell me the rule? (+ 6, – 3)

- **b)** 150, 143, 157, 150, 164, 157, 171, 164, 178, 171, 185, . . .
  
  Who can tell me the rule? (– 7, + 14)

**Extension**

What would the terms be in part a) _before_ the first number given?

---

**Lesson Plan 48**

**Notes**

Individual trial, monitored, helped.

Discussion, reasoning, agreement, self-correction, praising

Ps could have cubes on desk to check whether suggested sequences are valid

BB: _Square numbers_  
(product of a number × itself)

Praising

---

Individual work, monitored, helped.

Drawn on BB or use enlarged copy master or OHP

Let Ps suggest strategy for solution.

Discussion, agreement, self-correction, praising

Feedback for T

(Or done as whole class activity)

Orally at speed round class

---

Whole class activity

At a good pace

Ps sitting down point out mistakes of those continuing

Agreement on rules

Orally in unison, at speed
Rounding 1
T has BB already prepared. Ps come to BB to fill in:
  i) the next whole numbers ii) the next whole tens
less than and more than the given number. Show on number line.
BB:
  a) 122 < 123 < 124  b) 144 < 145 < 146
  120 < 123 < 130  140 < 145 < 150
  c) 178 < 179 < 180  d) 197 < 198 < 199
  170 < 179 < 180  190 < 198 < 200
  e) 237 < 238 < 239  f) 404 < 405 < 406
  230 < 238 < 240  400 < 405 < 410
Which whole ten is nearest the number in the middle? Ps come to BB
to tick the nearest 10. Discuss the case of 145. (equal distance from
both tens) T tells class the rounding rule: '5' is always rounded
up.
T shows Ps the sign which means 'approximately (nearly) equal to'.
Who could write 123 as 'approximately equal to' 120? (BB)
PbY3a, page 49
Q.1 Read: Draw a red dot at the whole ten nearest the number given.
Elicit that there is a different segment of the number line in each
part and that there is a 'tick' at every whole number.
Review at BB with whole class. Ps come to BB to draw dots and
to write the approximation. Class agrees/disagrees.
Solution:
  a) 134 ≈ 130  b) 188 ≈ 190  c) 253 ≈ 250,
  d) 309 ≈ 310  e) 175 ≈ 180  f) 246 ≈ 250
Whole class activity
Written on BB or use enlarged copy master or OHP
At a good pace
Reasoning, agreement,
checking on class number line,
praising
Ps read out inequalities too
BB: ≈
Rounding to nearest 10
  a) 123 ≈ 120
  b) 145 ≈ 150
  c) 179 ≈ 180
  d) 198 ≈ 200
  e) 238 ≈ 240
  f) 405 ≈ 410
In unison. Praising
Individual work, monitored
Drawn on BB or use enlarged copy master or OHP
Reasoning, agreement, self-
correction, praising
Deal with all mistakes
Remind Ps that '5' is rounded
up Feedback for T
### Activity 4

**Exact or approximate?**

Listen to my statement. Stand up if you think it is an exact value. Put your hands on your heads if you think it is only approximate (nearly correct).

- **a)** About 400 people live in my village. Show me . . . now! (=)
- **b)** There are 7 days in one week. Show me . . . now! (=)
- **c)** This box contains at least 100 oranges. Show me . . . now! (=)
- **d)** Bob says that his house is 400 m from the school. Show me . . . now! (≈)
- **e)** There are 24 hours in 1 day. Show me . . . now! (=)

Who got all 5 (4, 3, 2, 1, 0) correct? (Ps can say a statement too!)

### Notes

**Lesson Plan 49**

**Whole class activity**

Have a trial first, so that Ps exactly what to do.

Ps stand up or put hands on head in unison
T asks some Ps to explain their responses
Agreement on correct response
In good humour!
Praising

**Whole class activity**

Number line drawn on BB or use enlarged copy master or OHP or class number line
As several Ps what they think P comes to number line to mark the possible value
Class agrees/disagrees
BB:

- **a)** cost = 58 p
  - Possible values: 55 p, 56 p, 57 p, 58 p, 59 p, 60 p, 61 p, 62 p, 63 p, 64 p

Discussion, agreement

**Individual work, monitored, helped**

Discussion, agreement, checking, self-correcting, praising. Feedback for T.

Draw appropriate segments of number line on BB if necessary

Elicit that:

- 65 ≈ 70, 105 ≈ 110 and 215 ≈ 220

Extra praise if Ps suggest this without help

---

**Quantities**

Where would these amounts of money be on the number line?

- **a)** Pears cost 58 p per kg.
  - Is it an exact or an approximate price? (Exact price)
  - Who can show me where it would be on the number line.
  - BB:

  ![Number Line 58p](image)

- **b)** In the market, 1 kg of apples costs about 60 p.
  - Is it an exact price or an approximate price? (Approximate price)
  - Who can show me what the cost might be on the number line?
  - What other values could it be?
  - BB:

  ![Number Line 60p](image)

Discuss the case of 55 p and 65 p. (5 units round up to nearest 10)

### Notes

**Lesson Plan 49**

**Whole class activity**

Number line drawn on BB or use enlarged copy master or OHP or class number line
As several Ps what they think P comes to number line to mark the possible value
Class agrees/disagrees
BB:

- **a)** cost = 58 p
  - Possible values: 55 p, 56 p, 57 p, 58 p, 59 p, 60 p, 61 p, 62 p, 63 p, 64 p

Discussion, agreement

**Individual work, monitored, helped**

Discussion, agreement, checking, self-correcting, praising. Feedback for T.

Draw appropriate segments of number line on BB if necessary

Elicit that:

- 65 ≈ 70, 105 ≈ 110 and 215 ≈ 220

Extra praise if Ps suggest this without help

---

**PbY3a, page 49**

**Q.2** Read: *List the whole numbers for which the nearest whole ten would be:*

- a) 60  b) 100  c) 210

Review at BB with whole class. Ps come out to write solutions and show on class number line. Mistakes corrected.

**Solution:**

- a) 55, 56, 57, 58, 59, 60, 61, 62, 63, 64 = 60
- b) 95, 96, 97, 98, 99, 100, 101, 102, 103, 104 = 100
- c) 205, 206, 207, 208, 209, 210, 211, 212, 213, 214 = 210

Discuss the case of 0. Show on class number line. Elicit that:

- – 5, – 4, – 3, – 2, – 1, 0, 1, 2, 3, 4 = 0

**Extension**

Individual work, monitored, helped

Discussion, agreement, checking, self-correcting, praising. Feedback for T.

Draw appropriate segments of number line on BB if necessary

Elicit that:

- 65 ≈ 70, 105 ≈ 110 and 215 ≈ 220

Extra praise if Ps suggest this without help
<table>
<thead>
<tr>
<th>Activity</th>
<th>Notes</th>
</tr>
</thead>
</table>
| **7** Rounding 2  
T says a number and Ps round it to nearest ten. e.g.  
123 (120), 21 (20), 106 (110), 256 (260), 358 (360), 208 (210), 400 (400), 310 (310), 296 (300), 105 (110), 455 (460), etc.  
Then Ps can say a number and next P rounds it to nearest 10. | Whole class activity  
T chooses Ps at random  
Class points out errors  
If problems, confirm on class number line |
| **8** PbY3a, page 49  
Q.3 Read: Which digits can be written instead of the squares so that the nearest whole ten is 260?  
List all the possible 3-digit numbers.  
Review at BB with whole class. Ps come out to write solutions  
Class agree/disagree. If problems, check on class number line.  
Who had all correct? Who made a mistake? What was your mistake? Who did the same? etc. All mistakes dealt with. | Individual work, monitored, helped  
Discussion, agreement, checking, self-correction, evaluation, praising  
Feedback for T |
| **9** PbY3a, page 49, Q.4  
Read: Two different numbers can be rounded to 70 as the nearest whole ten.  
Think about what the numbers they could be. I will ask a question and you must show me if you think it is possible or impossible when I say.  
a) Is it possible that both numbers are less than 70?  
Show me... now! (Possible) D, tell me two possible numbers. (e.g. 65, 66)  
b) Is it possible that one of the numbers is 10 less than the other?  
Show me... now! (Impossible) E, why do you think so? (Smallest possible number is 65 and largest is 74, so greatest possible difference is 9)  
c) Is it possible that one of them has 5 and the other has 0 as the units digits?  
Show me... now! (Possible) F, tell me two possible numbers. (e.g. 65 ≈ 70 and 70 = 70)  
d) Is it possible that both numbers are whole tens?  
Show me... now! (Impossible) G, why do you think so? (Only possible whole ten is 70, but there is no other possible different number) | Whole class activity  
(Ps could write possible numbers at bottom of page in Pbs or in Ex. Bks.)  
Ps can show with cards or stand up for 'possible' and remain seated for 'impossible'  
Responses given in unison  
After each, Ps explain reasoning and give examples where relevant.  
Class agrees/disagrees  
Praising, encouragement only  
In good humour! (Or as individual trial first, reviewed with whole class) |
### Activity

Tables practice, revision, activities, consolidation  
*PbY3a, page 50*

### Solutions:

1. ![Diagram]

2. $\square + 40$: 171, 172, 173, 174, so $\square$: 131, 132, 133, 134

3. a) CII  
   b) LXXXX or XC  
   c) CCLX  
   d) LXXX  
   e) VI  
   f) C

4. e.g.  

<p>| | | |</p>
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<thead>
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<tr>
<td>1</td>
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<tr>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
</tbody>
</table>

5. a) $103 = 147 - 50 + 6$  
   b) $257 = 200 + 66 - 9$  
   c) $107 = 135 - 40 + 12$  
   d) $119 = 20 \times 7 - 3 \times 7$  
   e) $17 = 120 \div 10 + 50 \div 10$

6. a) 85 to 94  
   b) 105 to 114  
   c) 225 to 234  
   d) 355 to 364