Mathematics Enhancement Programme

TEACHING SUPPORT: Year 4

EXERCISES

The following exercises are taken from Year 4 Practice Books 4a and 4b. They illustrate more of the problem-solving questions rather than the routine ones. Do try these questions before looking at the solutions and suggested strategies.

1. Write the numbers which have:

a) an even digit as their hundreds digit and 500 as their nearest ten.

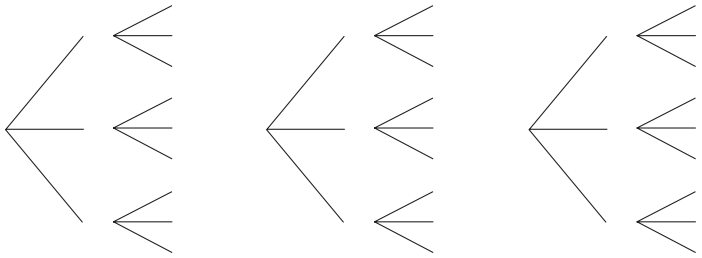
b) an odd digit as their hundreds digit and 500 as their nearest ten.

c) the smallest even digit as their tens digit and 1010 as their nearest ten.

(p2, Q5)

2. How many 3-digit numbers can you make from these digits? 5 6 1

a) Complete the tree diagrams.



b) List the numbers.

(p5, Q2)

3. *I thought of a number, then added 900.*
The result was a number less than 1000.

Write ✓ if you think the statement is true and **X** if you think it is false.

a) The number I first thought of must be less than 100. ☐

b) The number I first thought of must be less than 99. ☐

c) The number I first thought of could be equal to 99. ☐

d) The number I first thought of cannot be more than 99. ☐

e) The number I first thought of could be equal to 10. ☐

f) The number I first thought of cannot be 100. ☐

(p7, Q4)

4. Estimate the product first, then do the multiplication.

a) *E:* *E:* *E:* *E:*

	7	3	×	6	1	4	6	×	3	2	4	6	×	3	3	4	6	×	3

b) *E:* *E:* *E:* *E:*

	4	7	×	8	1	4	7	×	3	1	4	7	×	6	2	4	7	×	3

(p14, Q1)

5. Write the whole numbers up to 1000 which have 4 as the sum of their digits.

(p15, Q1)

6. Are the statements true or false? Write T for true and F for false in each box.

a) Every number which is a whole hundred is divisible by 2. ☐

b) There is an even number which has 5 as its units digit. ☐

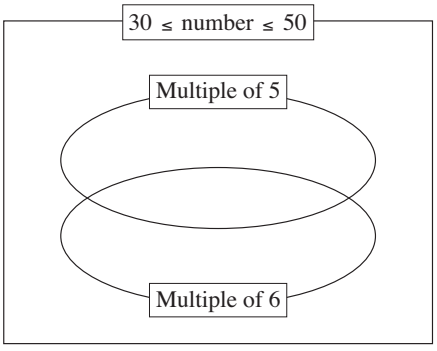
c) Every number which is divisible by 5 is a whole ten. ☐

d) 217 is divisible by neither 5 nor 2. ☐

e) Every number which is a whole ten is divisible by 2 and by 5. ☐

(p29, Q1)

7. Write the whole numbers from 30 to 50 in the correct set.



(p30, Q4)

8. Write in the boxes the numbers described. ☐

a) The smallest 4-digit: i) number ☐ ii) odd number ☐

b) The greatest 4-digit: i) number ☐ ii) odd number ☐

c) The greatest 4-digit number divisible by: i) 5 ☐ ii) 10 ☐

d) The greatest 4-digit number divisible by 100 which has the same digit in its hundreds and thousands columns.

(p33, Q4)

9. Estimate quickly, then calculate the sum.

a) 2653 + 1746

E: *C:*

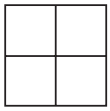
b) 1256 + 7902

E: *C:*

c) 5343 + 2145

E: *C:*

(p38, Q1)

10. 

a) How many rectangles are in this diagram? . . . . . .

b) How many rectangles would be in 874 such diagrams? . . . . . .

c) What is the **area** of the diagram? A = ...

d) What is the **perimeter** of the diagram? P = ...

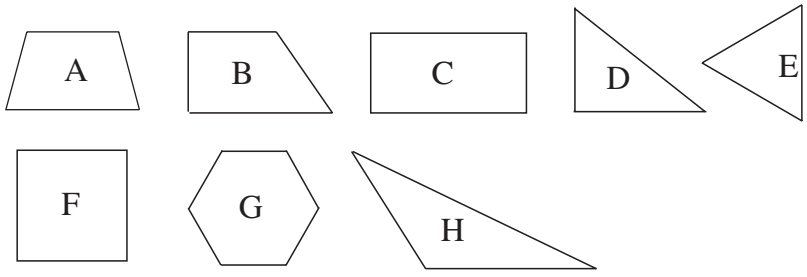
(p46, Q1)

11. a) In each diagram, mark

- right angles in *red* like this, 

- angles **smaller** than a right angle in *blue* like this, 

- angles **larger** than a right angle in *green* like this, 



b) List the letters of the shapes for which each statement is true.

i) It is a square. . . . . .

ii) It is a rectangle. . . . . .

iii) It is a quadrilateral. . . . . .

iv) It is a triangle. . . . . .

v) It has at least one right angle. . . . . .

vi) Every angle is a right angle. . . . . .

vii) It has at least one angle smaller than a right angle. . . . . .

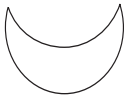
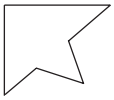
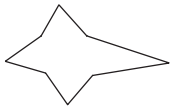
viii) All its angles are smaller than a right angle. . . . . .

ix) It has at least one angle larger than a right angle. . . . . .

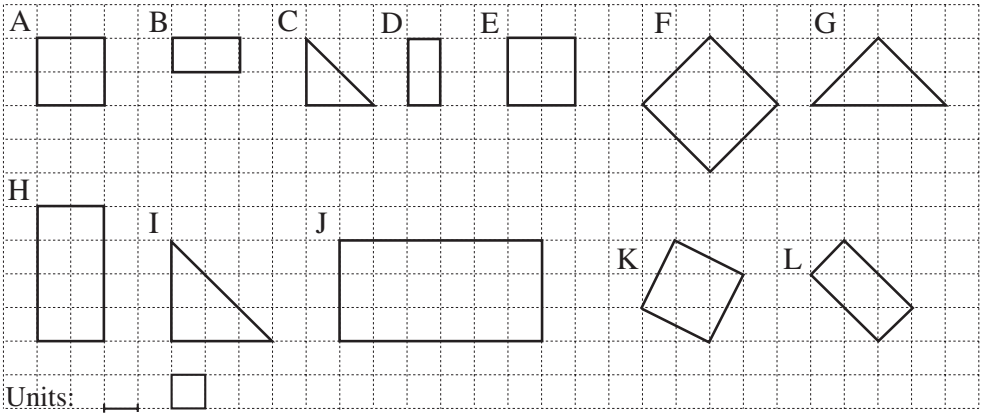
x) All its angles are larger than a right angle. . . . . .

(p49, Q2)

12. Complete these non-convex shapes so that they become **convex** shapes.

a)  b)  c)  d)  e) 

(p52, Q4)

13. 

List the **similar** shapes.

Write the **area** inside each shape and the length of the **perimeter** below.

(p56, Q1)

14. Complete the fractions.

a) $\frac{1}{2} = \frac{\square}{4} = \frac{4}{\square} = \frac{\square}{6} = \frac{\square}{10} = \frac{10}{\square} = \frac{\square}{100} = \frac{\square}{\square}$

b) $\frac{1}{4} = \frac{\square}{16} = \frac{2}{\square} = \frac{\square}{20} = \frac{8}{\square} = \frac{25}{\square} = \frac{\square}{\square} = \frac{\square}{\square}$

c) $\frac{1}{3} = \frac{2}{\square} = \frac{\square}{12} = \frac{3}{\square} = \frac{\square}{15} = \frac{\square}{24} = \frac{\square}{30} = \frac{100}{\square} = \frac{\square}{\square}$

(p80, Q2)

15. a) $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \square$ b) $\frac{3}{8} + \frac{2}{8} = \square$ c) $\frac{7}{12} - \frac{2}{12} = \square$

d) $\frac{11}{20} - \frac{9}{20} = \square$ e) $\frac{7}{10} + \frac{3}{5} = \square$ f) $\frac{3}{4} - \frac{3}{8} = \square$

(p83, Q4)

16. Compare the pairs of numbers and fill in the missing signs. (<, >, =)
Use the diagrams to help you.

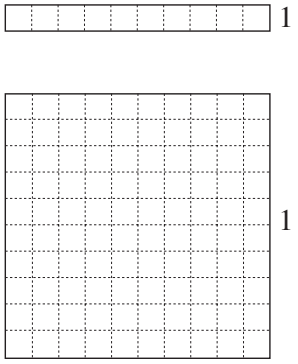
a) $\frac{2}{10} \square \frac{7}{10}$ $\frac{8}{10} \square 0.9$ $0.6 \square 0.3$

b) $\frac{15}{100} \square \frac{72}{100}$ $\frac{43}{100} \square 0.70$ $0.52 \square 0.49$

c) $0.04 \square 0.1$ $\frac{2}{10} \square \frac{18}{100}$ $0.27 \square 0.3$

d) $\frac{1}{5} \square 0.2$ $\frac{2}{5} \square 0.3$ $\frac{3}{10} \square 0.6$

e) $\frac{1}{5} \square \frac{17}{100}$ $\frac{3}{10} \square 0.51$ $\frac{78}{100} \square 0.53$



(p93, Q3)

17. Which quantity is greater? Fill in the missing signs.

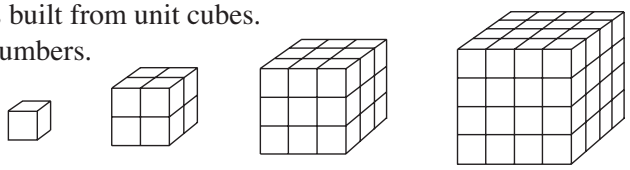
a) $\frac{3}{10}$ m ☐ 54 cm b) 0.9 kg ☐ 90 g c) $\frac{1}{6}$ hour ☐ 30 min

d) £150 20 p ☐ £150.2 e) $5\frac{7}{100}$ litres ☐ 5 litres 700 ml

f) $4\frac{1}{2}$ weeks ☐ 29 days g) 84.3 cm ☐ 843 mm ☐ 8.43 m

(p105, Q3)

18. Imagine these cubes built from unit cubes.
Fill in the missing numbers.



Length of 1 edge ⟼	1	2	3	4	5	6
Area of cube ☐						
Volume of cube ◻						

(p109, Q1)

19. Follow the example. Complete the sentences. Use the number line to help you.

a) 8°C is greater than 3°C by 5°C. $8 - 3 = 5, \quad 5 + 3 = 8$

b) 3°C is ☐ than 8°C by 5°C. $3 - 8 =$ ☐, ☐ $+ 8 = 3$

c) 8°C is greater than 0°C by ☐. $8 - 0 =$ ☐, ☐ $+ 0 = 8$

d) 3°C is greater than −2°C by ☐. $3 - (-2) =$ ☐, ☐ $+ (-2) = 3$

e) −2°C is less than 3°C by ☐. $-2 - 3 =$ ☐, ☐ $+ 3 = -2$

f) −2°C is ☐ than −5°C by 3°C. $-2 - (-5) =$ ☐, ☐ $+ (-5) = -2$

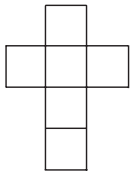
(p134, Q4)

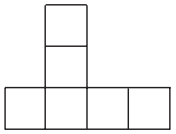
20. In an opaque bag there are 10 *black* and 30 *white* marbles.

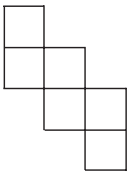
What is the smallest number of marbles you must take out of the bag (with your eyes closed) to be **certain** of getting 2 marbles which are the same colour?

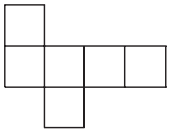
(p137, Q4)

21. Circle the nets which can make a cube. Colour their opposite faces in the same colour.

a) 

b) 

c) 

d) 

(p138, Q5)

22. What is the smallest natural multiple of 2, 3, 4, 5 and 8?

(p140, Q2)

23. In an opaque bag, there are 5 *black*, 10 *red* and 5 *white* marbles.

What is the smallest number of marbles you must take out of the bag (with your eyes closed) to be **certain** of getting:

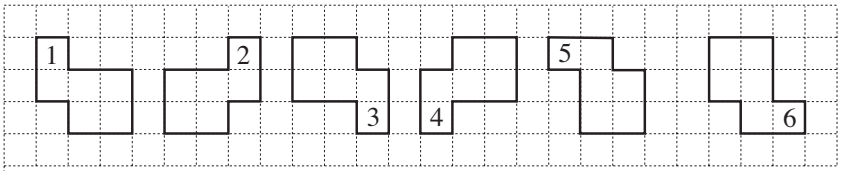
a) 3 marbles which are the same colour

b) a *red* marble? *(p140, Q3)*

24. List in your exercise book all the numbers between 999 and 10 000 which have 4 as the sum of their digits. How many did you find?

(p140, Q4)

25. These shapes are **congruent**. What has been done to *Shape 1* to make *Shape 2*, *Shape 2* to make *Shape 3*, and so on? Write it in your exercise book.



(p141, Q2)

26. Among 67 scientists at a conference,

47 speak French,

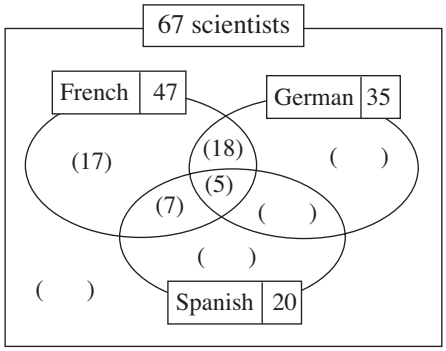
35 speak German,

20 speak Spanish,

12 speak French and Spanish,

11 speak German and Spanish,

5 speak all three languages.



a) Complete the *Venn* diagram.

b) How many scientists speak:

i) only French ☐ ii) only German ☐ iii) only Spanish? ☐

c) How many scientists speak Spanish and German but not French? ☐

d) How many scientists speak neither Spanish nor German nor French? ☐

(p151, Q3)

27. Circle the natural numbers up to 100 which have only two factors.
(e.g. the only factors of **7** are 7 and 1)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

We call these numbers **prime numbers**. List them in increasing order.

(p161, Q2)

28. The perimeter of a triangle is 10 cm and the length of each side is a whole cm.

Are these statements true or false? Write a ✓ if true and a **X** if false.

a) The triangle has only one side which is 1 cm long. ☐

b) The triangle could have only one side which is 2 cm long. ☐

c) The triangle has only one side which is 3 cm long. ☐

d) The triangle has only one side which is 5 cm long. ☐

(p173, Q1)