

Student Text **UNIT 11** *Units of Measurement*

Answers

11.1 Units and Measuring

1. (a) 125 mm (b) 24 mm (c) 70 mm (d) 107 mm (e) 7 mm
(measurements might vary with copy of text)

2. (a) km or miles (b) cm (c) mg or grams (d) kg
(e) ml (f) m³ or litres

3. (a) 12 300 g (b) 4700 mm (c) 164 mm (d) 3400 m
(e) 370 cm (f) 6 000 ml

- 4.
- | <i>Length in m</i> | <i>Length in cm</i> | <i>Length in mm</i> |
|--------------------|---------------------|---------------------|
| 4 | 400 | 4000 |
| 3.11 | 311 | 3110 |
| 1.5 | 150 | 1500 |
| 3.74 | 374 | 3740 |
| 8.62 | 862 | 8620 |

5. (a) 15 (b) 10.3 (c) 130 (d) 45 (e) 56 (f) 18.2 (g) 6.6
(h) 3.4 (i) 11.2 (j) 2.6 (k) 36 (l) 84 (m) 220

6. (a) 850 ml (b) 5

7. (a) cm (b) m (c) m (d) cm/mm (e) m
(f) cm/mm (g) mm

11.2 Upper and Lower Bounds

1. (a) $4.65 \leq x < 4.75$ (b) $41.5 \leq l < 42.5$ (c) $15.615 \leq A < 15.625$
(d) $16.15 \leq d < 16.25$ (e) $11.675 \leq r < 11.685$ (f) $14.235 \leq m < 14.245$
(g) $217.5 \leq w < 218.5$ (h) $15.195 \leq l < 15.205$ (i) $4.995 \leq w < 5.005$
(j) $19.95 \leq v < 20.05$ (k) $18.085 \leq A < 18.095$ (l) $31.4505 \leq v < 31.4515$

2. (a) $41.5 \leq l < 42.5$, $31.5 \leq w < 32.5$
(b) (i) $146 \leq \text{perimeter} < 150$ (ii) $1307.25 \leq \text{area} < 1381.25$

3. (a) $11.5 \leq \text{radius} < 12.5$
(b) (i) $23 \leq \text{diameter} < 25$ (ii) $72.3 \leq \text{circumference} < 78.5$
(iii) $415.5 \leq \text{area} < 490.9$

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Answers

11.2

4. (a) 50 (b) 10 (c) 525 (d) 0.333... (e) 1.4
5. (a) 7.743 to 7.882 (b) 7.782 to 7.844
6. (a) $2.4735 \leq \text{mass} < 2.4745$ (b) 1.62805, 1.62795
7. (a) 251 kg (b) 2 kg
8. (a) 29.5 cm (b) $18.35 \leq \text{length} < 18.45$
9. 210 g, 200 g
10. 2 m 97 cm

11.3 Estimating Areas

1. (a) 6 cm^2 (b) 10 cm^2 (c) 10 cm^2 (d) 14 cm^2
(e) 14 cm^2 (f) 7 cm^2
2. (a) 16 cm^2 (b) 14 cm^2 (c) 8 cm^2 (d) 12 cm^2
(e) 9 cm^2 (f) 12 cm^2
3. (a) 8 cm^2 (b) 9 cm^2 (c) between 10 cm^2 and 12 cm^2 (11 cm^2)
(d) between 8 cm^2 and 10 cm^2 (9 cm^2)
(e) between 6 cm^2 and 8 cm^2 (7 cm^2)
(f) between 16 cm^2 and 18 cm^2 (17 cm^2)
(g) between 10 cm^2 and 12 cm^2 (11 cm^2)
(h) between 9 cm^2 and 10 cm^2
(i) between 9 cm^2 and 11 cm^2 (10 cm^2)
4. Island A, 26 km^2 ; Island B, 24 km^2
5. 47 cm^2

11.4 Conversion of Units

1. (a) 7.5 cm (b) 252 lbs (c) 96 ounces (d) 75 inches (e) 33 lbs
(f) 108 inches (g) 90 cm (h) 22.5 litres (i) 300 cm (j) 99 lbs
(k) 15.75 pints (l) 202.5 litres (m) 14 pints (n) 48 pints
2. (a) 3.6 kg (b) 1.4 kg (c) 9.1 litres (d) 4.0 inches (e) 13.3 feet
(f) 5.0 lbs (g) 13.0 stones (h) 11.1 gallons (i) 7.0 feet (j) 20.8 inches
(k) 3.6 gallons (l) 1.7 litres (m) 2.7 kg (n) 7.1 feet
3. (a) 65.6 km (b) 6.56 litres (c) 1.46 gallons
4. Jimar is both taller and heavier than Sam (Jimar is 185 cm tall and weighs over 70 kg).

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11.4

5. Jelan picked the greater weight; she picked about 17.6 lbs.
6. The area of the sheet of glass is 2250 cm². Its dimensions are 37.5 cm by 60 cm.
7. (a) 48 km (b) $K = \frac{M \times 8}{5}$ (c) $M = 62.5$
8. (a) 48 000 g (b) 171 g (to the nearest gram) (c) 105.6 lbs
9. (a) cm (b) litres
10. (a) 160 cm (to the nearest cm) (b) 63.5 kg