

SOLUTIONS

Week 47

- (2)
 $4 \times 7 = 28$
 $28 + 12 = 40$
 $40 \div 5 = 8$
- (1)
 $\angle DEC = 180^\circ - 118^\circ$
 $= 62^\circ$ (\angle s on a str. line)
 $\angle ADC = 180^\circ - 105^\circ$
 $= 75^\circ$ (\angle s between parallel lines add up to 180°)
 $\angle ECD = 180^\circ - 62^\circ - 75^\circ$
 $= 43^\circ$ (sum of \angle s in a triangle)
- (2)
 Average speed = Total distance \div Total time
 $= (2 \times 210) \text{ km} \div (1\frac{1}{2} + 2) \text{ h}$
 $= 120 \text{ km/h}$
- (4)
- (3)
 Circumference of the semicircle
 $= \frac{3.14 \times 20 \text{ cm}}{2}$
 $= 31.4 \text{ cm}$
 $20 \text{ cm} + 20 \text{ cm} + 20 \text{ cm} + 31.4 \text{ cm} = 91.4 \text{ cm}$
- (1)
 $5 \text{ units} = 10\,880$
 $1 \text{ unit} = 10\,880 \div 5 = 2176$
 $7 \text{ units} = 7 \times 2176 = 15\,232$
 Height = $\frac{15\,232 \text{ cm}^3}{32 \text{ cm} \times 28 \text{ cm}} = 17 \text{ cm}$
- (3)
 $14 + 4 + n + 3(14) + 4 + n$
 $= 14 + 4 + n + 42 + 4 + n$
 $= 64 + 2n$
- (3)
- (2)
 Volume of water in the tank = $6 \times 5000 \text{ cm}^3$
 $= 30\,000 \text{ cm}^3$
 Height of water level = $30\,000 \text{ cm}^3 \div 480 \text{ cm}^2$
 $= 62.5 \text{ cm}$
- (2)
 $9 \text{ pm to } 11 \text{ am} \rightarrow 14 \text{ h}$
 $924 \div 14 = 66$

- 150 cm
 $1 \text{ unit} = 15$
 $3 \text{ units} = 3 \times 15 = 45$
 $2 \text{ units} = 2 \times 15 = 30$
 Perimeter = $(2 \times 45) \text{ cm} + (2 \times 30) \text{ cm}$
 $= 150 \text{ cm}$
- \$132
 $2 \text{ units} = 48$
 $1 \text{ unit} = 48 \div 2$
 $= 24$
 $3 \text{ units} = 3 \times 24$
 $= 72$
 $72 \div 2 = 36$
 $60\% \rightarrow 36$
 $100\% \rightarrow \frac{36 \times 100}{60}$
 $= 60$
 $72 + 60 = 132$
- \$359.52
 $80\% \times 420 = 336$
 $7\% \times 336 = 23.52$
 $336 + 23.52 = 359.52$
- 54 students
 $180^\circ - 140^\circ = 40^\circ$
 $40^\circ \rightarrow 6$
 $360^\circ \rightarrow \frac{6 \times 360}{40} = 54$
- 7 : 18
 $360^\circ \rightarrow 54$
 $140^\circ \rightarrow \frac{54 \times 140}{360} = 21$
 $\begin{matrix} +3 & (& 21 : 51 &) & +3 \\ & & 7 : 18 & & \end{matrix}$

Week 48

- $\angle ADE = \angle BDC = 111^\circ$ (vertically opp. \angle s)
 $\angle x = \frac{180^\circ - 111^\circ}{2}$
 $= 34.5^\circ$ (isosceles triangle)
 Answer: 34.5°
- $11 \times 3 = 33$
 $15 - 11 = 4$
 $4 \times 1 = 4$
 $33 - 4 = 29$

Answer: 11 questions

3. oil : water
 3 : 4
 1 unit = 420
 7 units = 7×420
 = 2940
 $2940 \text{ ml} = 2940 \text{ cm}^3$
 $2940 \text{ cm}^3 + 9560 \text{ cm}^3 = 12\,500 \text{ cm}^3$
 $12\,500 \text{ cm}^3 \div 20 \text{ cm} = 625 \text{ cm}^2$
 Answer: 625 cm²
4. Circumference of the 4 small semicircles
 = $2 \times 3.14 \times 10 \text{ cm}$
 = 62.8 cm
 Circumference of large semicircle
 = $\frac{1}{2} \times 3.14 \times 40 \text{ cm}$
 = 62.8 cm
 $62.8 \text{ cm} + 62.8 \text{ cm} = 125.6 \text{ cm}$
 Answer: 125.6 cm

Week 49

1. Town X to Town Y:
 Time = 45 min
 = $\frac{3}{4} \text{ h}$
 Distance = Speed \times Time
 = $60 \text{ km/h} \times \frac{3}{4} \text{ h}$
 = 45 km
 Town Y to Town Z:
 Time = Distance \div Speed
 = $90 \text{ km} \div 72 \text{ km/h}$
 = $\frac{90}{72} \text{ h} = 1\frac{1}{4} \text{ h}$
 $45 + 90 = 135$
 $\frac{3}{4} + 1\frac{1}{4} = 2$
 Speed = Distance \div Time
 = $135 \text{ km} \div 2 \text{ h}$
 = $\frac{135}{2} \text{ km/h}$
 = $67\frac{1}{2} \text{ km/h}$
 Answer: $67\frac{1}{2} \text{ km/h}$
2. (a) $\angle AEB = 180^\circ - 97^\circ - 58^\circ$
 = 25° (sum of \angle s in a triangle = 180°)
 (b) $\angle ADC = 58^\circ$
 (opp. \angle s of a parallelogram are equal)
 $\angle DAF = 180^\circ - 58^\circ - 97^\circ$
 = 25° (\angle s between parallel lines add up to 180°)

$$\begin{aligned} \angle AFD &= 180^\circ - 58^\circ - 25^\circ \\ &= 97^\circ \text{ (sum of } \angle\text{s in a triangle} = 180^\circ) \end{aligned}$$

Answers: (a) 25°
 (b) 97°

3. **Before**
 Faye

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 Helen

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 ?
- After**
 Faye

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 Helen

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 28
- (a) 2 units = 32
 1 unit = $32 \div 2$
 = 16
 5 units = 5×16
 = 80
 (b) $12 \times 16 = 192$
 $192 + 28 = 220$
 $5 \times 16 = 80$
 Faye : Helen
 $220 : 80$
 $11 : 4$
 Answers: (a) 80 more beads
 (b) 11 : 4

Week 50

1. $\angle BCD = 180^\circ - 30^\circ - 30^\circ$
 = 120° (sum of \angle s in a triangle = 180°)
 $\angle X = 180^\circ + 120^\circ$
 = 300°
 Answer: 300°
2. (a) **19%**
 $100\% - 18\% - 40\% = 42\%$
 $42\% \div 2 = 21\%$
 $40\% - 21\% = 19\%$
 (b) **500 students**
 $21\% \rightarrow 105$
 $1\% \rightarrow 105 \div 21 = 5$
 $100\% \times 5 = 500$
 (c) **35 girls**
 $1 - \frac{2}{3} = \frac{1}{3}$
 $105 \div 3 = 35$
 (d) **200 teachers**
 teachers : students
 $\frac{2}{200} = \frac{5}{500}$
 $\frac{2}{200} \times 100 = \frac{5}{500} \times 100$

3. **63 and 64**

Use 'Guess and Check' method:

$80 \times 81 = 6480$	[too high]	✗
$70 \times 71 = 4970$	[high]	✗
$60 \times 61 = 3660$	[too low]	✗
$63 \times 64 = 4032$		✓

4. **$321\frac{3}{7} \text{ cm}^2$**

$$\text{Area of 3 squares} = 3 \times 15 \text{ cm} \times 15 \text{ cm} = 675 \text{ cm}^2$$

$$\text{Area of 2 circles} = 2 \times \frac{22}{7} \times 7.5 \text{ cm} \times 7.5 \text{ cm}$$

$$= \frac{2475}{7} \text{ cm}^2$$

$$= 353\frac{4}{7} \text{ cm}^2$$

$$675 \text{ cm}^2 - 353\frac{4}{7} \text{ cm}^2 = 321\frac{3}{7} \text{ cm}^2$$

5. **\$4599**

$$100\% - 65\% = 35\%$$

$$35\% = 1609.65$$

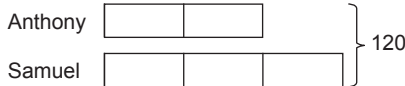
$$1\% = \frac{1609.65}{35} = 45.99$$

$$100\% = 100 \times 45.99 = 4599$$

6. **\$72**

$$3 \times 23 = 69$$

$$69 + 23 + 28 = 120$$



$$5 \text{ units} = 120$$

$$1 \text{ unit} = 120 \div 5 = 24$$

$$3 \text{ units} = 3 \times 24 = 72$$

7. **21 oranges**

$$12 + 18 = 30$$

$$5 \text{ units} = 30$$

$$1 \text{ unit} = 30 \div 5 = 6$$

$$7 \text{ units} = 7 \times 6 = 42$$

$$42 \div 2 = 21$$

8. **15 km/h**

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$= 60 \text{ km/h} \times 2\frac{1}{2} \text{ h}$$

$$= 150 \text{ km}$$

$$2\frac{1}{2} - \frac{1}{2} \text{ h} = 2 \text{ h}$$

$$\text{Speed} = \text{Distance} \div \text{Time}$$

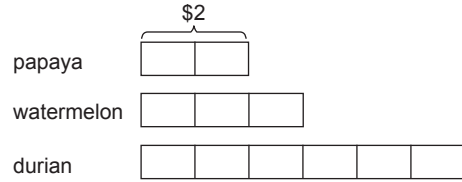
$$= 150 \text{ km} \div 2 \text{ h}$$

$$= 75 \text{ km/h}$$

$$75 - 60 = 15$$

Week 51

1.



$$2 \text{ units} = 2$$

$$1 \text{ unit} = 2 \div 2 = 1$$

$$6 \text{ units} = 6 \times 1 = 6$$

Answer: \$6

2. (a) $10\% \times 4500 = \frac{10}{100} \times 4500$

$$= 450$$

$$450 + 200 = 650$$

(b) $30\% \times 4500 = \frac{30}{100} \times 4500$

$$= 1350$$

$$1350 + 250 = 1600$$

(c) $100\% - 10\% - 30\% = 60\%$

$$4500 + 200 + 250 = 4950$$

$$60\% \times 4500 = \frac{60}{100} \times 4500$$

$$= 2700$$

$$\frac{2700}{4950} \times 100\% = 54.54\%$$

Answers: (a) 650 first-class seats

(b) 1600 second-class seats

(c) 54.55%

3. (a) $2 \times 6 = 12$

$$8 \div 4 = 2$$

$$12 - 2 = 10$$

$$1 \text{ minute} \rightarrow 10 \text{ litres}$$

$$10 \text{ minutes} \rightarrow 10 \times 10 = 100 \text{ litres}$$

$$40\% \rightarrow 100$$

$$100\% \rightarrow \frac{100}{40} \times 100$$

$$= 250 \text{ litres}$$

(b) $10 \text{ litres} \rightarrow 1 \text{ minute}$

$$250 \text{ litres} \rightarrow 250 \div 10$$

$$= 25 \text{ minutes}$$

$$25 - 10 = 15 \text{ minutes}$$

Answers: (a) 250 l

(b) 15 minutes

4. $9 \times 33 = 297$

$$27 \text{ units} = 297$$

$$1 \text{ unit} = 297 \div 27 = 11$$

$$11 \text{ units} = 11 \times 11 = 121$$

Answer: 121 yellow beads

Week 52

1. (a) $48 \div 4 = 12$
 $54 \div 4 = 13.5 \approx 13$
 $40 \div 4 = 10$
 $12 \times 13 \times 10 = 1560$
- (b) $15 \text{ cm} \times 10 \text{ cm} \times 5 \text{ cm} = 750 \text{ cm}^3$
 $8 \times 750 \text{ cm}^3 = 6000 \text{ cm}^3$
 $48 \text{ cm} \times 54 \text{ cm} \times 40 \text{ cm} = 103\,680 \text{ cm}^3$
 $103\,680 \text{ cm}^3 - 6000 \text{ cm}^3 = 97\,680 \text{ cm}^3$
- Answers: (a) 1560 cubes
(b) 97 680 cm³
2. Area of the rectangle = $70 \text{ cm} \times 20 \text{ cm}$
 $= 1400 \text{ cm}^2$
- Area of each circle = $3.14 \times \frac{10}{2} \text{ cm} \times \frac{10}{2} \text{ cm}$
 $= 78.5 \text{ cm}^2$
- Area of the shaded portion
 $= 1400 \text{ cm}^2 - (14 \times 78.5) \text{ cm}^2$
 $= 301 \text{ cm}^2$
- Answer: 301 cm²
3. (a) 9.30 am to 3.30 pm \rightarrow 6 hours
Distance = Speed \times Time
 $= 80 \text{ km/h} \times 6 \text{ h}$
 $= 480 \text{ km}$
- Time = Distance \div Speed
 $= 480 \text{ km} \div 100 \text{ km/h}$
 $= 4.8 \text{ h}$
 $= 4 \text{ h } 48 \text{ mins}$
-
- (b) $6 \text{ h} - 2 \text{ h} = 4 \text{ h}$
Speed = Distance \div Time
 $= 480 \text{ km} \div 4 \text{ h}$
 $= 120 \text{ km/h}$
- Answers: (a) 4.18 pm
(b) 120 km/h