

FOMP 10 Chapter 1 Review Pack v1
Answer Section

SHORT ANSWER

1. ANS:
caliper

PTS: 1 DIF: 1-2 OBJ: Section 1.1 NAT: M1
TOP: SI Measurement KEY: caliper | measuring instruments
2. ANS:
7.9 in.
 $20 \text{ cm} \frac{1 \text{ in}}{2.54 \text{ cm}} = 7.9 \text{ in}$

PTS: 1 DIF: 1-2 OBJ: Section 1.3 NAT: M1 | M2
TOP: Converting Between SI and Imperial Systems
KEY: centimetre | conversion | imperial | inch | SI
3. ANS:
SI system

PTS: 1 DIF: 1-2 OBJ: Section 1.1 NAT: M1
TOP: SI Measurement KEY: SI
4. ANS:
imperial system

PTS: 1 DIF: 1-2 OBJ: Section 1.2 NAT: M1
TOP: Imperial Measurement KEY: imperial
5. ANS:
metre

PTS: 1 DIF: 1-2 OBJ: Section 1.1 NAT: M1
TOP: SI Measurement KEY: metre | SI
6. ANS:
inch

PTS: 1 DIF: 1-2 OBJ: Section 1.2 NAT: M1
TOP: Imperial Measurement KEY: imperial | inch
7. ANS:
yard

PTS: 1 DIF: 1-2 OBJ: Section 1.3 NAT: M1
TOP: Converting Between SI and Imperial Systems KEY: conversion | metre | yard
8. ANS:
7.5 cm

PTS: 1 DIF: 1-2 OBJ: Section 1.1 NAT: M1
TOP: SI Measurement KEY: referent | SI

9. ANS:

7 in

PTS: 1 DIF: 1-2

TOP: Imperial Measurement

OBJ: Section 1.2 NAT: M1

KEY: estimate | imperial | perimeter

10. ANS:

$$\frac{1}{13\,500\,000}$$

PTS: 1 DIF: 1-2

TOP: SI Measurement

OBJ: Section 1.1 NAT: M1

KEY: conversion | kilometres to centimetres | scale | SI

11. ANS:

trundle wheel

PTS: 1 DIF: 1-2

TOP: SI Measurement

OBJ: Section 1.1 NAT: M1

KEY: measuring instruments | trundle wheel

12. ANS:

49.7

$$156\text{ ft} \frac{1\text{ rotation}}{\pi\text{ ft}} = 49.7\text{ rotations}$$

PTS: 1 DIF: 3-4

TOP: Imperial Measurement

OBJ: Section 1.2 NAT: M1

KEY: conversion | foot | imperial | yard | circumference | pi

13. ANS:

2827 ft²

$$\pi \left(\frac{60\text{ ft}}{2} \right)^2 = 2827\text{ ft}^2$$

PTS: 1 DIF: 3-4

TOP: Imperial Measurement

OBJ: Section 1.2 NAT: M1

KEY: area of a circle | foot | imperial | pi

14. ANS:

5 h 14 min

$$\text{Minutes} = \text{round} \left(\frac{26\text{ mi}}{8\text{ kmh}} \frac{1.61\text{ kmh}}{1\text{ mph}} \frac{60\text{ min}}{1\text{ hr}} \right) = 314\text{ min}$$

$$\text{hours} = \text{floor} \left(\frac{314\text{ min}}{60\text{ hour}} \right) = 5\text{ hours}$$

$$\text{min} = 314\text{ min} - 5\text{ hrs} \frac{60\text{ min}}{1\text{ hr}} = 14\text{ min}$$

PTS: 1 DIF: 3-4

TOP: Imperial Measurement

OBJ: Section 1.2 NAT: M1

KEY: imperial | mile | speed

15. ANS:

$$61.4 \text{ in.}^2$$

$$\sqrt{2377 \text{ cm}^2 \frac{1 \text{ in}^2}{(2.54 \text{ cm})^2} \frac{1 \text{ cube}}{6 \text{ faces}}} = 61.4 \text{ in}$$

PTS: 1 DIF: 3-4 OBJ: Section 1.3 NAT: M1 | M2

TOP: Converting Between SI and Imperial Systems

KEY: surface area | conversion | centimetre | imperial | inch | SI

16. ANS:

$$86.11 \text{ yd}^2$$

$$9 \text{ m} * 8 \text{ m} \frac{(1.0936 \text{ yd})^2}{1 \text{ m}^2} = 86.11 \text{ yd}^2$$

PTS: 1 DIF: 3-4 OBJ: Section 1.3 NAT: M1 | M2

TOP: Converting Between SI and Imperial Systems

KEY: area | conversion | imperial | metre | SI | yard

17. ANS:

$$3.7 \text{ h}$$

$$\frac{851 \text{ km}}{143 \text{ mph}} \frac{1 \text{ mph}}{1.61 \text{ kmh}} = 3.7 \text{ hrs}$$

PTS: 1 DIF: 3-4 OBJ: Section 1.3 NAT: M1 | M2

TOP: Converting Between SI and Imperial Systems

KEY: conversion | imperial | kilometre | mile | SI | speed

18. ANS:

$$4.55 \text{ m}^2$$

$$7 \text{ ft} * 7 \text{ ft} \frac{(1 \text{ yd})^2}{(3 \text{ ft})^2} \frac{(1 \text{ m})^2}{(1.0936 \text{ yd})^2} = 4.55 \text{ m}^2$$

PTS: 1 DIF: 3-4 OBJ: Section 1.3 NAT: M1 | M2

TOP: Converting Between SI and Imperial Systems

KEY: area | conversion | foot | imperial | metre | SI | square feet to square metres

19. ANS:

$$1 \text{ in.} = 2.54 \text{ cm}$$

$$9 * 2.54 = 22.86$$

$$145 - 22.86 = 122.14$$

Jennifer's sister is approximately 122 cm tall.

PTS: 1 DIF: 3-4 OBJ: Section 1.3 NAT: M1 | M2

TOP: Converting Between SI and Imperial Systems

KEY: conversion | imperial to SI | inches to centimetres

20. ANS:

Example:

$$1.8 \text{ m} + 2.6 \text{ m} = 4.4 \text{ m}$$

Sam's height plus the length of the ladder add to 4.4 m. If Sam had a reach of 0.6 m over his head, he could possibly reach the first branches. Unless Sam has very long arms, this seems like a long way to reach. For safety, the ladder must lean up against the tree. This reduces the effective height of the ladder and means that Sam must have a reach of more than 0.6 m. In addition, Sam cannot stand on the top rung, for safety reasons. No, Sam cannot trim the tree with a ladder this length.

PTS: 1

DIF: 3-4

OBJ: Section 1.1 NAT: M1

TOP: SI Measurement

KEY: metre | SI | referent

21. ANS:

$$\mathbf{a)} P = 2(696 + 348)$$

$$= 2(1044)$$

$$= 2088$$

The perimeter of the block is 2088 ft.

b) One time around:

$$2088 \text{ ft} = 2088 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}}$$

$$= 696 \text{ yd}$$

Six times around:

$$11(696) = 7656$$

Erin jogs 7656 yd each morning.

PTS: 1

DIF: 3-4

OBJ: Section 1.2 NAT: M1

TOP: Imperial Measurement

KEY: conversion | imperial | feet to yards | perimeter

22. ANS:

$$\mathbf{a)} P = 2(130 + 65)$$

$$= 2(195)$$

$$= 390$$

The perimeter of the garden is 390 ft.

$$P = 390 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}}$$

$$= 130 \text{ yd}$$

The perimeter of the garden is 130 yd.

b) Let C represent the total cost of the fence.

$$C = 130(12.00)$$

$$= 1560.00$$

The fence will cost \$1560.00.

PTS: 1

DIF: 3-4

OBJ: Section 1.2 NAT: M1

TOP: Imperial Measurement

KEY: conversion | imperial | feet to yards | perimeter | square feet to square yards

23. ANS:

$$\begin{aligned} \text{a) } A &= l \times w \\ &= 13.5 \times 9 \\ &= 121.5 \end{aligned}$$

The area of the poster is 121.5 ft².

$$\begin{aligned} \text{b) } A &= 13.5 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}} \times 9 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}} \\ &= 4.5 \text{ yd} \times 3 \text{ yd} \\ &= 13.5 \text{ yd}^2 \end{aligned}$$

The area of the poster is 13.5 yd².

c) Let C represent the total cost to laminate the poster.

$$\begin{aligned} C &= 1.80 \times 13.5 \\ &= 24.30 \end{aligned}$$

The cost to laminate the poster is \$24.30.

PTS: 1 DIF: 3-4 OBJ: Section 1.2 NAT: M1

TOP: Imperial Measurement

KEY: area | conversion | imperial | feet to yards | square feet to square yards

24. ANS:

a) 3.746 cm or 37.46 mm

b) Read the value on the fixed scale exactly at or just to the left of the zero on the moving scale (3.7 cm or 37 mm). Identify the first line on the moving scale that aligns with a line on the fixed scale (0.046 cm or 0.46 mm). Add the two figures.

PTS: 1 DIF: 3-4 OBJ: Section 1.1 NAT: M1
TOP: SI Measurement KEY: caliper | measuring instruments | SI

25. ANS:

2 min 34 s

$$\frac{169 \text{ yd}}{1 \text{ m/s}} \frac{1 \text{ m}}{1.0936 \text{ yd}} = 155 \text{ sec}$$

$$\text{min} = \text{floor} \left(155 \text{ s} \frac{1 \text{ min}}{60 \text{ s}} \right) = 2$$

$$\text{sec} = 155 \text{ s} - 2 \text{ min} \frac{60 \text{ s}}{1 \text{ min}} = 34 \text{ s}$$

PTS: 1 DIF: 5-6 OBJ: Section 1.3 NAT: M1 | M2

TOP: Converting Between SI and Imperial Systems

KEY: conversion | imperial | metre | SI | speed | yard

26. ANS:
\$210

$$\text{area} = 14 \text{ ft} * 19 \text{ ft} \frac{(1 \text{ yd})^2}{(3 \text{ ft})^2} \frac{(1 \text{ m})^2}{(1.0936 \text{ yd})^2} = 25 \text{ m}^2$$

$$\text{cost} = 25 \text{ m}^2 \frac{\$8.50}{1 \text{ m}^2} = \$210$$

PTS: 1 DIF: 5-6 OBJ: Section 1.3 NAT: M1 | M2
TOP: Converting Between SI and Imperial Systems
KEY: area | conversion | foot | imperial | metre | SI | square feet to square metres

27. ANS:

Area of front and back faces:

$$\begin{aligned} A &= 2 \times 19 \times 14 \\ &= 532 \end{aligned}$$

The area of the front and back faces of the box totals 532 cm².

Area of two long edges:

$$\begin{aligned} A &= 2 \times 19 \times 1.5 \\ &= 57 \end{aligned}$$

The area of the two long edges of the box totals 57 cm².

Area of two short edges:

$$\begin{aligned} A &= 2 \times 14 \times 1.5 \\ &= 42 \end{aligned}$$

The area of the two short edges of the box totals 42 cm².

Area needed for overlapping = 66 cm²

Total area of wrapping:

$$\begin{aligned} A &= 532 + 57 + 42 + 66 \\ &= 697 \end{aligned}$$

The total amount of plastic wrapping needed is 697 cm².

PTS: 2 DIF: 5-6 OBJ: Section 1.1 NAT: M1
TOP: SI Measurement KEY: surface area | centimetre | SI

28. ANS:

Surface area of the roof:

$$A = 2 \times 6 \times 12$$

$$= 144$$

The surface area of the roof is 144 m².

Surface area of the walls:

Surface area of the two gables, less the two windows:

$$1 \text{ cm} = 0.01 \text{ m}$$

$$80 \times 0.01 = 0.8$$

$$60 \times 0.01 = 0.6$$

$$A = 2 \times (9.6 \times 3.6) \times 0.5 - (2 \times 0.8 \times 0.6)$$

$$= 33.6$$

The surface area of the two gables totals 33.6 m².

Surface area of the front and back, less eight windows and two doors:

$$1 \text{ cm} = 0.01 \text{ m}$$

$$80 \times 0.01 = 0.8$$

$$60 \times 0.01 = 0.6$$

$$205 \times 0.01 = 2.05$$

$$82 \times 0.01 = 0.82$$

$$A = (2 \times 9.6 \times 5.5) - (8 \times 0.8 \times 0.6) - (2 \times 2.05 \times 0.82)$$

$$= 98.398$$

The surface area of the front and back walls is 98.398 m².

Surface area of the two side walls, less four windows:

$$A = 2 \times 12 \times 5.5 - (4 \times 0.8 \times 0.6)$$

$$= 132 - 1.92$$

$$= 130.08$$

The surface area of the two sides is 130.08 m².

Surface area of all four walls:

$$A = 33.6 + 98.398 + 130.08$$

$$= 262.078$$

The total surface area of the walls is 262.078 m².

Surface area of the 14 windows:

$$1 \text{ cm} = 0.01 \text{ m}$$

$$80 \times 0.01 = 0.8$$

$$60 \times 0.01 = 0.6$$

$$A = 14 \times 0.8 \times 0.6$$

$$= 6.72$$

The total surface area of the windows is 6.72 m².

Surface area of the two doors:

$$1 \text{ cm} = 0.01 \text{ m}$$

$$205 \times 0.01 = 2.05$$

$$82 \times 0.01 = 0.82$$

$$A = 2 \times 2.05 \times 0.82$$

$$= 3.362$$

The total surface area of the doors is 3.362 m².

Total surface area of the house:

$$A = 144 + 262.078 + 6.72 + 3.362$$

$$= 416.16$$

The total surface area of the house is 416.16 m².

PTS: 5 DIF: 7-8 OBJ: Section 1.1 NAT: M1
TOP: SI Measurement
KEY: surface area | centimetre | conversion | SI | centimetres to metres