Fully-worked Solutions

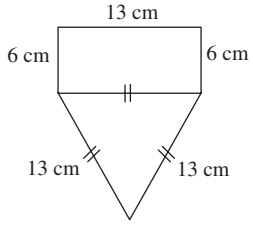
Practice 10

Formative Practice

1 Perimeter $= 10 + 9 + 4 + 6$
$= 29$ cm
Answer: **A**

2 (a) Perimeter $= 2 + 4 + 4 + 12$
$= 22$ cm
(b) Perimeter $= 7 + 5 + 6 + 10$
$= 28$ cm
(c) Perimeter $= 6 + 7 + 6 + 5$
$= 24$ cm

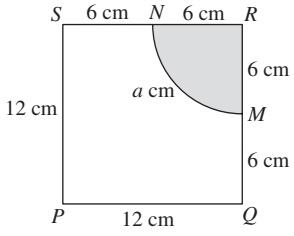
3



Perimeter $= 13 + 6 + 13 + 13 + 6$
$= 51$ cm

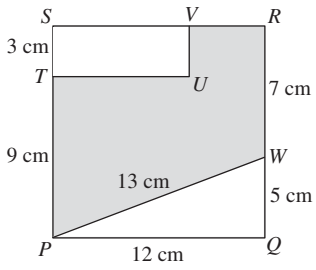
4 Perimeter $KLMN = 2(12 + 4)$
$= 32$ cm
$4x = 32$
$x = 8$
Length of sides of square
$= 8$ cm

5



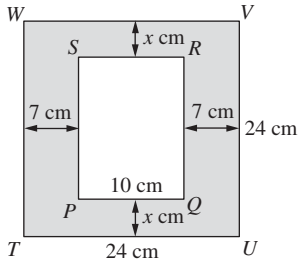
$a + 6 + 6 = 28$
$a + 12 = 28$
$a = 16$
Perimeter of the portion of card $PQMNS$
$= 16 + 6 + 12 + 12 + 6$
$= 52$ cm

6



Perimeter of the shaded region
$= 13 + 7 + 12 + 3 + 9$
$= 44$ cm

7



$4 \times 24 + 2(10 + 24 - 2x) = 152$
$96 + 68 - 4x = 152$
$164 - 4x = 152$
$4x = 12$
$x = 3$

8 A: Area $= 12 \times 6$
$= 72$ cm^2
B: Area $= \frac{1}{2} \times (10 + 4) \times 9$
$= 63$ cm^2
C: Area $= \frac{1}{2} \times 18 \times 8$
$= 72$ cm^2
D: Area $= \sqrt{72} \times \sqrt{72}$
$= 72$ cm^2
Answer: **B**

9 24 units^2

10 (a) Area $= \frac{1}{2} \times (4 + 6) \times 3$
$= 15$ cm^2
(b) Area $= 4 \times 8$
$= 32$ cm^2
(c) Area $= 2 \times \frac{1}{2} \times 5 \times 8$
$= 40$ cm^2
(d) Area $= \frac{1}{2} \times (6 + 9) \times 6$
$= 45$ cm^2

11 (a) Area of trapezium $ABCD$

$= \frac{1}{2} \times (48 + 32) \times 25$

$= 1\,000 \text{ cm}^2$

(b) Area of parallelogram $DEFG$

$= 16 \times 15$

$= 240 \text{ cm}^2$

(c) Area of the shaded region

$= 1\,000 - 240$

$= 760 \text{ cm}^2$

12 Area $= 3 \times 20 + \frac{1}{2} \times (6 + 14) \times 5 + 8 \times 12$

$= 60 + 50 + 96$

$= 206 \text{ cm}^2$

13 A: Perimeter $= 4 \times 10$

$= 40$ cm

B: Perimeter $= 2(20 + 5)$

$= 50$ cm

C: Perimeter $= 2(25 + 4)$

$= 58$ cm

D: Perimeter $= 2(12.5 + 8)$

$= 41$ cm

Answer: **C**

14 Perimeter $P = 2(4 + 3)$

$= 14$ cm

Perimeter $Q = 2(6 + 2)$

$= 16$ cm

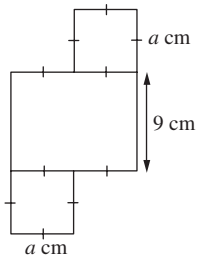
Perimeter $R = 2(12 + 1)$

$= 26$ cm

(a) P, Q, R

(b) The perimeter of the rectangle with the same area increases when the difference between the length and the width increases.

15



$8a + 9 + 9 = 66$

$8a = 48$

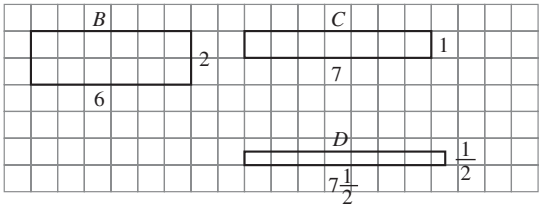
$a = 6$

Area $= 2 \times 6 \times 6 + 9 \times 12$

$= 72 + 108$

$= 180 \text{ cm}^2$

16



(b)

Rectangle	Length (unit)	Width (unit)	Perimeter (unit)	Area (unit^2)
A	5	3	16	15
B	6	2	16	12
C	7	1	16	7
D	$7\frac{1}{2}$	$\frac{1}{2}$	16	$3\frac{3}{4}$

(c) For rectangles with the same perimeter, the area of rectangle decreases when the difference between the length and width increases.

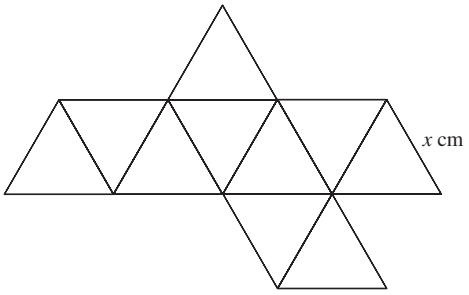
Summative Practice

1 Perimeter $= 13 + 4 + 12 + 5 + 4$

$= 38$ cm

Answer: **C**

2



$3x = 39$

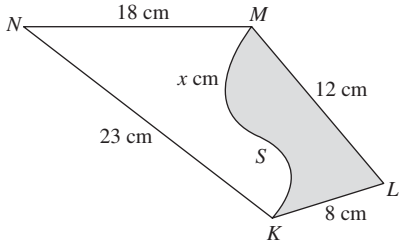
$x = 13$

Perimeter $= 12 \times 13$

$= 156$ cm

Answer: **B**

3



$x + 8 + 12 = 31$

$x + 20 = 31$

$x = 11$

Perimeter of the region $KNMSK$

$= 11 + 18 + 23$

$= 52$ cm

Answer: **B**

4 Area of $PQR = \frac{1}{2} \times 6 \times 4$

$= 12 \text{ cm}^2$

A: Area $= 24 - 2 \times 5$

$= 24 - 10$

$= 14 \text{ cm}^2$

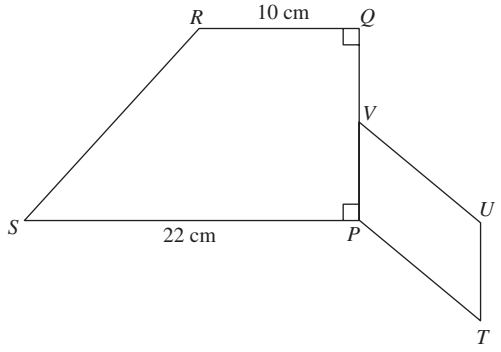
B: Area = $24 - 2 \times 3 - 1 \times 6$
$= 24 - 6 - 6$
$= 12\ \text{cm}^2$

C: Area = $24 - \frac{1}{2} \times 3 \times 4$
$= 24 - 6$
$= 18\ \text{cm}^2$

D: Area = 2×4
$= 8\ \text{cm}^2$

Answer: **B**

5

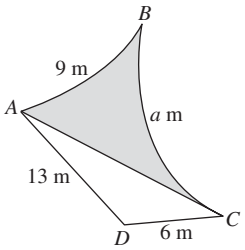


$6 \times PV = 36$
$PV = 6$ cm
$PQ = 12$ cm

Area of trapezium
$= \frac{1}{2} \times (22 + 10) \times 12$
$= \frac{1}{2} \times 32 \times 12$
$= 192\ \text{cm}^2$

Answer: **C**

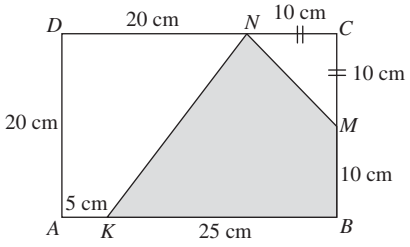
6



$AC + 13 + 6 = 36$
$AC = 17$ m
$17 + a + 9 = 45$
$a + 26 = 45$
$a = 19$

Perimeter of the whole plot of land
$= 19 + 9 + 13 + 6$
$= 47$ m

7



Area of the shaded region
$= 30 \times 20 - \frac{1}{2} \times 10 \times 10 - \frac{1}{2} \times (20 + 5) \times 20$
$= 600 - 50 - 250$
$= 300\ \text{cm}^2$

8 $QS = 20$ m

$\frac{1}{2} \times 20 \times PR - 10 \times 5 = 550$
$10PR - 50 = 550$
$10PR = 600$
$PR = 60$ m