Fully-Worked Solutions

PRACTICE 7

Section A

1 Distance of $PQ = 6 \times 2$
$= 12$ units
Answer: **C**

2 Distance of $RS = 5 \times 3$
$= 15$ units
Answer: **D**

3 Distance of $AB = 3 - (-4)$
$= 7$ units
Answer: **C**

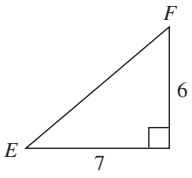
4 Distance of $CD = 9 - (-2)$
$= 11$ units
Answer: **D**

5 $8 - x = 6$
$x = 8 - 6$
$= 2$

$10 - y = 7$
$y = 10 - 7$
$= 3$

Answer: **A**

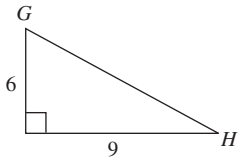
6



$EF^2 = 6^2 + 7^2$
$\sqrt{EF^2} = \sqrt{85}$
$EF = 9.22$ cm

Answer: **B**

7



$GH^2 = 6^2 + 9^2$
$\sqrt{GH^2} = \sqrt{117}$
$GH = 10.82$ cm

Answer: **A**

8 **A** Distance $= 5$ units

B Distance $= 4$ units

C Distance $= \sqrt{3^2 + 4^2}$
$= \sqrt{25}$
$= 5$ units

D Distance $= \sqrt{(-6)^2 + 8^2}$
$= \sqrt{100}$
$= 10$ units

Answer: **B**

9 $PQ = 13$
$\sqrt{(11 + 1)^2 + (8 - m)^2} = 13$
$144 + (8 - m)^2 = 169$
$(8 - m)^2 = 25$
$64 - 16m + m^2 = 25$
$m^2 - 16m + 39 = 0$
$(m - 3)(m - 13) = 0$
$m = 3, m = 13$
Answer: **C**

10 $PT = TQ$
Answer: **B**

11 Midpoint $= \left(\frac{-2 + 4}{2}, \frac{8 + 2}{2}\right)$
$= (1, 5)$
Answer: **A**

12 Midpoint $= \left(\frac{-3 + 7}{2}, \frac{9 - 7}{2}\right)$
$= (2, 1)$
Answer: **D**

13 Midpoint $= (3, q)$

$\left(\frac{p + 10}{2}, \frac{5 + 9}{2}\right) = (3, q)$

$\frac{p + 10}{2} = 3$
$p + 10 = 6$
$p = -4$

$q = \frac{5 + 9}{2}$
$q = 7$

Answer: **C**

14 $M(3, y)$, $L(x, 0)$
M = Midpoint of KL

$(3, y) = \left(\frac{8 + x}{2}, \frac{10 + 0}{2}\right)$

$\frac{8 + x}{2} = 3$
$8 + x = 6$
$x = -2$
$\therefore L(-2, 0)$
Answer: **B**

15 L = Midpoint of KM

$(1, 1) = \left(\frac{-2 + x}{2}, \frac{3 + y}{2}\right)$

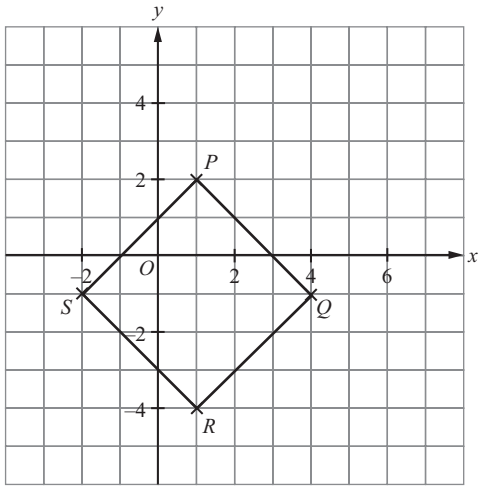
$\frac{-2 + x}{2} = 1$
$-2 + x = 2$
$x = 4$

$\frac{3 + y}{2} = 1$
$3 + y = 2$
$y = -1$

$\therefore M(4, -1)$
Answer: **A**

16 Luas/*Area* $= \frac{1}{2} \times 8 \times 4$
$= 16$ units^2
Answer: **B**

17



Square

Answer: **C**

Section B

1 (a) (i) $PQ = 6 \times 5$
$= 30$ units

(ii) $RS = 5 \times 4$
$= 20$ units

(b) (i) $x = 3 + 6 = 9$

(ii) $y = 2 + 4 = 6$

2 (a) (i) Distance $= 17 - 9$
$= 8$ units

(ii) Distance $= 3 - (-2)$
$= 5$ units

(b) (i) Midpoint $= \left(\frac{2-4}{2}, \frac{9+3}{2}\right)$
$= (-1, 6)$ [✓]

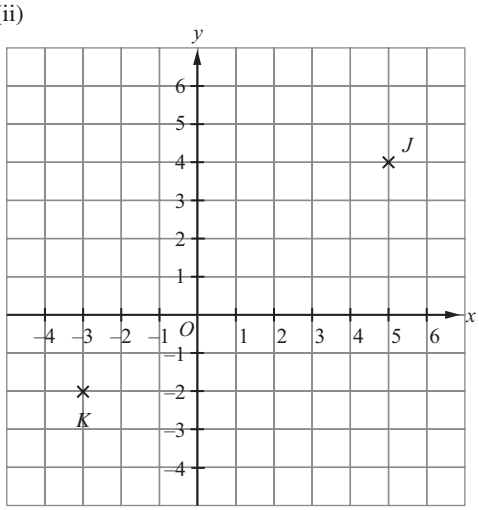
(ii) Midpoint $= \left(\frac{-3-5}{2}, \frac{6+2}{2}\right)$
$= (-4, 4)$ [✗]

3 (a) $P(-2, 10)$, $R(5, -6)$

(b) Point T is 3 units to the left of y-axis and 5 units upwards from the x-axis.

4 (a) (i) $J(5, 4)$

(ii)



(b) Midpoint of $JK = \left(\frac{5-3}{2}, \frac{4-2}{2}\right)$
$= (1, 1)$

Section C

1 (a) (i) $x = 8$, $y = 1 + 10 = 11$
$A(8, 11)$

(ii) Midpoint $= \left(\frac{2+8}{2}, \frac{1+11}{2}\right)$
$= (5, 6)$

(b) (i) $L(1, 2)$
$KL = LM = 4$ units
$x = 1 + 4 = 5$

(ii) $JL = 8 - 2$
$= 6$ units

(iii) Area of $JKM = \frac{1}{2} \times KM \times JL$
$= \frac{1}{2} \times (4 + 4) \times 6$
$= \frac{1}{2} \times 8 \times 6$
$= 24$ units^2

(c) (i) $S(0, 2)$
Midpoint of QS = Midpoint of PR

$\left(\frac{0+m}{2}, \frac{2+6}{2}\right) = \left(\frac{-3+9}{2}, \frac{6+2}{2}\right)$

$\frac{m}{2} = \frac{-3+9}{2}$

$m = 6$

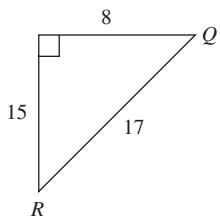
(ii) Area of $PQRS = SR \times h$
$= (9 - 0) \times (6 - 2)$
$= 9 \times 4$
$= 36$ units^2

2 (a) (i) $x = -5$, $y = 2$
$H(-5, 2)$

(ii) Area of $EFGH = 8 \times 5$
$= 40$ units^2

(b) (i) $x + 9 = 16$
$x = 7$

(ii) Let $R(h, k)$



Midpoint of PQ

$= \left(\frac{-9+7}{2}, \frac{5+5}{2}\right)$

$= (-1, 5)$

$h = -1$

$5 - k = 15$

$k = 5 - 15$

$= -10$

$\therefore R(-1, -10)$

(c) $M(h, k)$

K = Midpoint of JM

$$(-2, 6) = \left(\frac{-8 + h}{2}, \frac{10 + k}{2}\right)$$

$-8 + h = -4$ $\qquad$ $10 + k = 12$

$h = -4 + 8$ $\qquad$ $k = 2$

$= 4$

$M(4, 2)$

L = Midpoint of KM

$$= \left(\frac{-2 + 4}{2}, \frac{6 + 2}{2}\right)$$

$= (1, 4)$

3 (a) $x = -25$

$19 - y = 28$

$y = -9$

$\therefore S(-25, -9)$

(b) Area of $PQRS = 1\,428$ units^2

$$\frac{1}{2} \times (60 + SR) \times 28 = 1\,428$$

$14(60 + SR) = 1\,428$

$60 + SR = 102$

$SR = 42$ units

Let $R(h, k)$

$h + 25 = 42$

$h = 17$

$k = -9$

$\therefore R(17, -9)$

(c) $QR = \sqrt{(35 - 17)^2 + (19 + 9)^2}$

$= \sqrt{324 + 784}$

$= \sqrt{1\,108}$

$= 33.287$ units

Perimeter $= 60 + 33.287 + 42 + 28$

$= 163.287$ units

(d) Midpoint of QS

$$= \left(\frac{35 - 25}{2}, \frac{19 - 9}{2}\right)$$

$= (5, 5)$