

Fully-worked Solutions

Practice 4

Formative Practice

- 1 Answer: **D**
- 2 (a) (i) The length of each side of the polygon $ABCDEF$ is different.
 (ii) Each interior angle of the polygon $ABCDEF$ is the same.
 (iii) The polygon $ABCDEF$ is an irregular polygon.
- (b) (i) The length of each side of the polygon $ABCDEFGHJI$ is the same.
 (ii) Each interior angle of the polygon $ABCDEFGHJI$ is the same.
 (iii) The polygon $ABCDEFGHJI$ is a regular polygon.

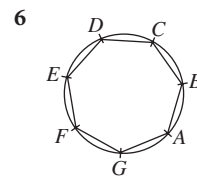
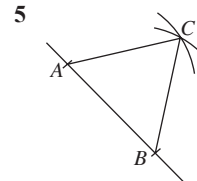
- 3 (a) Number of axes of symmetry =
 Number of axes of symmetry number of sides
 Polygon KLM a regular polygon.
- (b) Number of axes of symmetry =
 Number of axes of symmetry number of sides
 Polygon $PQRST$ a regular polygon.

8 (a)

	Number of sides, n	Number of triangles	Sum of interior angles
(i)	3	1	180°
(ii)	4	2	360°
(iii)	5	3	540°
(iv)	6	4	720°

- (b) (i) $n - 2$
 (ii) $(n - 2) \times 180^\circ$

- 4 (a) ✓
 (c) ✓



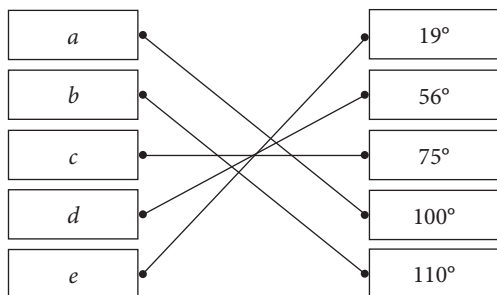
- 7 Interior angle of regular polygon

$$= \frac{(8 - 2) \times 180^\circ}{8}$$

$$= 135^\circ$$

$$y = 135^\circ$$
 Answer: **B**

9 (a)



$$\begin{aligned} \text{(b) } a + b + c + d + e &= 100^\circ + 110^\circ + 75^\circ + 56^\circ + 19^\circ \\ &= 360^\circ \end{aligned}$$

$$\begin{aligned} \text{10 (a) } p + q + r + s + t + u &= 360^\circ \\ \text{(b) Sum of interior angles of polygon} &= (6 - 2) \times 180^\circ \\ &= 720^\circ \\ a + b + c + d + e + f &= 720^\circ \end{aligned}$$

$$\begin{aligned} \text{11 Number of sides} &= 5 \\ \text{Sum of interior angles of polygon} &= (5 - 2) \times 180^\circ \\ &= 540^\circ \\ x + 70^\circ + 100^\circ + 130^\circ + 140^\circ &= 540^\circ \\ x &= 100^\circ \end{aligned}$$

$$\begin{aligned} \text{12 } n &= 6 \\ x &= \frac{(6 - 2) \times 180^\circ}{6} \\ &= 120^\circ \end{aligned}$$

$$\begin{aligned} \text{13 (a) (i) } m + 154^\circ + 132^\circ &= 360^\circ \\ \text{(ii) } m + 286^\circ &= 360^\circ \\ m &= 74^\circ \\ \text{(b) (i) } p + 88^\circ + 139^\circ + 20^\circ &= 360^\circ \\ \text{(ii) } p + 247^\circ &= 360^\circ \\ p &= 113^\circ \end{aligned}$$

$$\begin{aligned} \text{14 (a) } x &= \frac{360^\circ}{5} \\ &= 72^\circ \\ \text{(b) } x &= \frac{360^\circ}{12} \\ &= 30^\circ \end{aligned}$$

$$\begin{aligned} \text{15 } 20^\circ &= \frac{360^\circ}{n} \\ n &= \frac{360^\circ}{20^\circ} \\ &= 18 \\ \therefore \text{ Number of sides of the regular polygon is } &18. \end{aligned}$$

$$\begin{aligned} \text{16 Interior angle of regular polygon} &= \frac{(10 - 2) \times 180^\circ}{10} \\ &= 144^\circ \end{aligned}$$

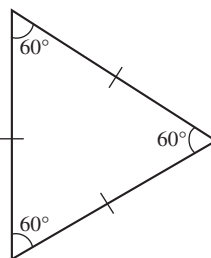
$$\begin{aligned} \angle QRS &= 144^\circ \\ \angle FRS &= 180^\circ - 144^\circ \\ &= 36^\circ \\ x &= 180^\circ - 36^\circ - 36^\circ \\ &= 108^\circ \end{aligned}$$

Answer: A

$$\begin{aligned} \text{17 Interior angle of polygon } PQRST &= \frac{(5 - 2) \times 180^\circ}{5} \\ &= 108^\circ \\ \angle RST &= 108^\circ \\ x &= \frac{1}{2} \times (180^\circ - 108^\circ) \\ &= 36^\circ \\ \angle QPT &= 108^\circ \\ 108^\circ &= y + 63^\circ \\ y &= 45^\circ \\ x + y &= 36^\circ + 45^\circ \\ &= 81^\circ \end{aligned}$$

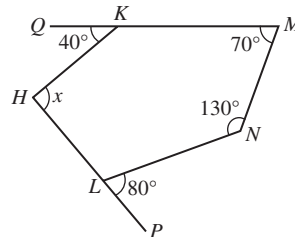
Summative Practice

1



Answer: B

2

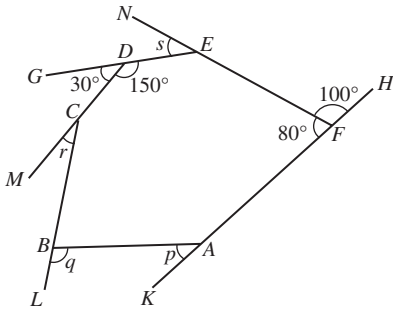


$$\begin{aligned} \angle HLN &= 180^\circ - 80^\circ \\ &= 100^\circ \\ \angle HKM &= 180^\circ - 40^\circ \\ &= 140^\circ \end{aligned}$$

$$\begin{aligned} \text{Sum of interior angles of } HLNKM &= (5 - 2) \times 180^\circ \\ &= 540^\circ \\ x + 140^\circ + 70^\circ + 130^\circ + 100^\circ &= 540^\circ \\ x + 440^\circ &= 540^\circ \\ x &= 100^\circ \end{aligned}$$

Answer: C

3



$$\begin{aligned}\angle GDM &= 180^\circ - 150^\circ \\ &= 30^\circ\end{aligned}$$

$$\begin{aligned}\angle EFH &= 180^\circ - 80^\circ \\ &= 100^\circ\end{aligned}$$

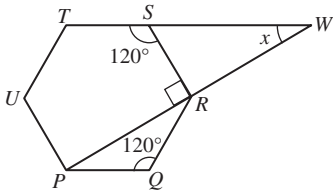
$$p + q + r + 30^\circ + s + 100^\circ = 360^\circ$$

$$p + q + r + s + 130^\circ = 360^\circ$$

$$p + q + r + s = 230^\circ$$

Answer: C

4



Interior angle of PQRSTU

$$= \frac{(6-2) \times 180^\circ}{6}$$

$$= 120^\circ$$

$$\begin{aligned}\angle PRQ &= \frac{1}{2} \times (180^\circ - 120^\circ) \\ &= 30^\circ\end{aligned}$$

$$\angle PRS = 120^\circ - 30^\circ$$

$$= 90^\circ$$

$$\angle RSW = 180^\circ - 120^\circ$$

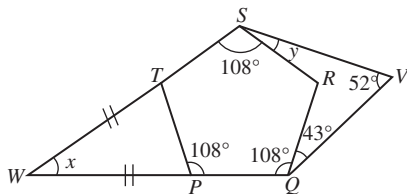
$$= 60^\circ$$

$$x + 60^\circ = 90^\circ$$

$$= 30^\circ$$

Answer: C

5



Interior angle of PQRST

$$= \frac{(5-2) \times 180^\circ}{5}$$

$$= 108^\circ$$

$$\angle TPW = 180^\circ - 108^\circ$$

$$= 72^\circ$$

$$x = 180^\circ - 72^\circ - 72^\circ$$

$$= 36^\circ$$

$$36^\circ + 108^\circ + y + 52^\circ + 43^\circ + 108^\circ = 360^\circ$$

$$y + 347^\circ = 360^\circ$$

$$y = 13^\circ$$

Answer: D

6 (a) Number of sides = 9

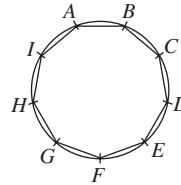
Number of axes of symmetry of regular nonagon is 9.

(b) Interior angle of ABCDEFGHI

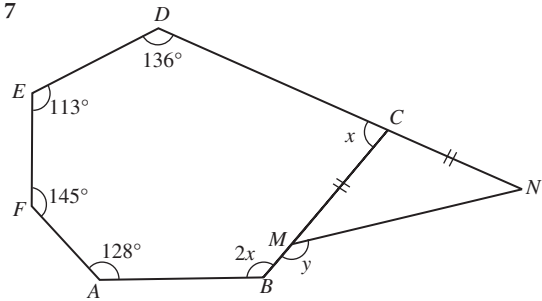
$$= \frac{(9-2) \times 180^\circ}{9}$$

$$= 140^\circ$$

(c)



7



Sum of interior angles of ABCDEF

$$= (6-2) \times 180^\circ$$

$$= 720^\circ$$

$$2x + x + 136^\circ + 113^\circ + 145^\circ + 128^\circ = 720^\circ$$

$$3x + 522^\circ = 720^\circ$$

$$3x = 198^\circ$$

$$x = 66^\circ$$

$$\angle MCN = 180^\circ - 66^\circ$$

$$= 114^\circ$$

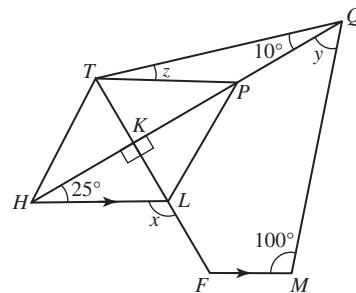
$$\angle CMN = \frac{1}{2} \times (180^\circ - 114^\circ)$$

$$= 33^\circ$$

$$y = 180^\circ - 33^\circ$$

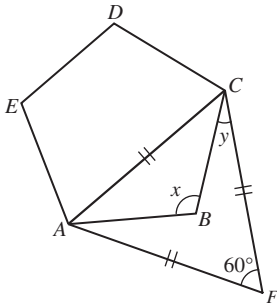
$$= 147^\circ$$

8



$$\begin{aligned} \angle HKL &= 90^\circ \\ x &= 25^\circ + 90^\circ \\ x &= 115^\circ \\ \angle LFM &= 115^\circ \\ y + 100^\circ + 115^\circ + 90^\circ &= 360^\circ \\ y + 305^\circ &= 360^\circ \\ y &= 55^\circ \\ \angle KPT &= 25^\circ \\ z + 10^\circ &= 25^\circ \\ z &= 15^\circ \end{aligned}$$

9



$$\begin{aligned} \text{Interior angle of } ABCDE \\ &= \frac{(5-2) \times 180^\circ}{5} \\ &= 108^\circ \\ x &= 108^\circ \end{aligned}$$

$$\begin{aligned} \angle ACB &= \frac{1}{2} \times (180^\circ - 108^\circ) \\ &= 36^\circ \\ y + 36^\circ &= 60^\circ \\ y &= 24^\circ \end{aligned}$$

10 (a) Sum of interior angles of polygon = 1 260°

$$\begin{aligned} (n-2) \times 180^\circ &= 1\,260^\circ \\ n-2 &= 7 \\ n &= 9 \end{aligned}$$

Interior angle of regular polygon

$$= \frac{1\,260^\circ}{9}$$

$$= 140^\circ$$

$$x = 140^\circ$$

(b) $y + 140^\circ = 180^\circ$

$$y = 40^\circ$$

$$x : y = 140^\circ : 40^\circ$$

$$= 7 : 2$$