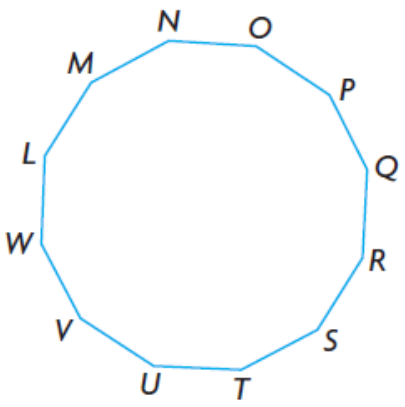
Homework Answers p.99-102 # 1, 2, 3, 4, 7 a, 10, 11, 16

1. a) Determine the sum of the measures of the interior angles of a regular dodecagon.

b) Determine the measure of each interior angle of a regular dodecagon.



a) 1800°

b) 150°

2. Determine the sum of the measures of the angles in a 20-sided convex polygon.

$3240°$

3. The sum of the measures of the interior angles of an unknown polygon is 3060°. Determine the number of sides that the polygon has.

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4. Honeybees make honeycombs to store their honey. The base of each honeycomb is roughly a regular hexagon. Explain why a regular hexagon can be used to tile a surface.

e.g., The interior angles of a hexagon equal 120°. Three hexagons will fit together since the sum is 360°.

7. Each interior angle of a regular convex polygon measures 140°.

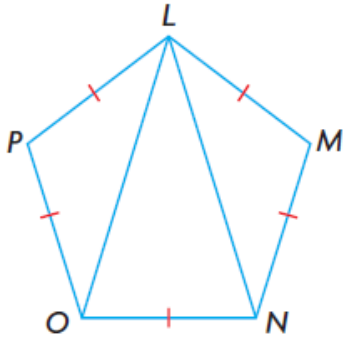
a) Prove that the polygon has nine sides.

a)
$$\frac{180°(n-2)}{n} = 140°$$
$$180°\,(n-2) = 140°n$$
$$180°n - 360° = 140°n$$
$$40°n = 360°$$
$$n = 9$$

10. *LMNOP* is a regular pentagon.

a) Determine the measure of $\angle OLN$.

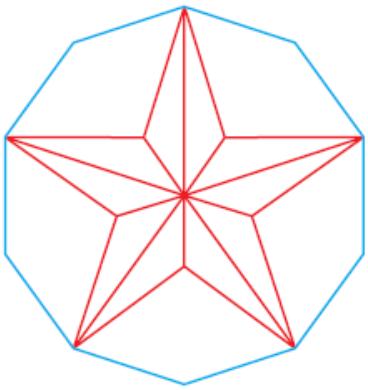
b) What kind of triangle is $\triangle LON$? Explain how you know.



a) 36°

b) isosceles triangle

11. Sandy designed this logo for the jerseys worn by her softball team. She told the graphic artist that each interior angle of the regular decagon should measure 162°, based on this calculation:



$$S(10) = \frac{180°(10 - 1)}{10}$$

$$S(10) = \frac{1620°}{10}$$

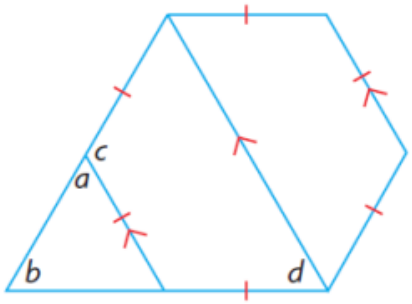
$$S(10) = 162°$$

Identify the error she made and determine the correct angle.

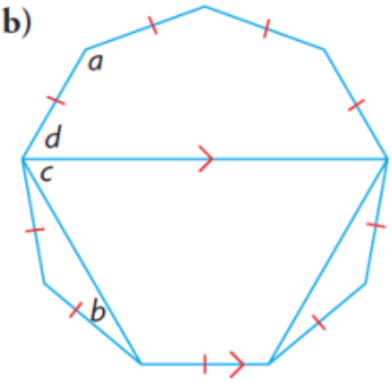
The numerator of the formula for $S(10)$ should be $180°(10 - 2)$; $S(10) = 144°$.

16. In each figure, the congruent sides form a regular polygon. Determine the values of a, b, c, and d.

a)



b)



a) $\angle a = 60°, \angle b = 60°, \angle d = 60°, \angle c = 120°$

b) $\angle a = 140°, \angle b = 20°, \angle c = 60°, \angle d = 60°$

Attachments

2s4e1 finalt.mp4

2s4e2 finalt.mp4

2s4e3 finalt.mp4

PM11-2s4-exterior.gsp

PM11-2s4-interior.gsp