NY Regents Geometry Samples

1. Which is an equation of the locus of points equidistant from the points $A(4, 1)$, and $B(10, 1)$?

   (A) $x = 7$ (B) $y = 7$

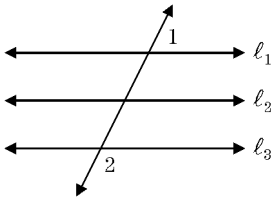
   (C) $x = 3$ (D) $y = 3$

2. The equation of the locus of points 5 units from the origin is

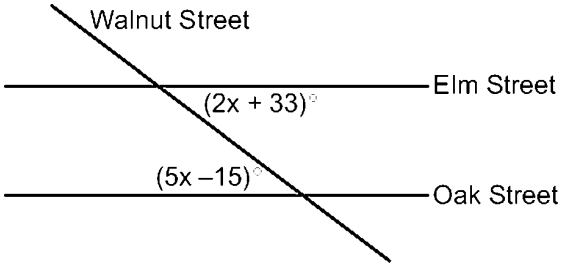
   (A) $x^2 + y^2 = 5$ (B) $x^2 + y^2 = 25$

   (C) $x = 5$ (D) $y = 5$

3. In the accompanying diagram, $\ell_1 \parallel \ell_2 \parallel \ell_3$. If $m\angle 1 = 70$, find $m\angle 2$.



4. Two parallel roads, Elm Street and Oak Street, are crossed by a third, Walnut Street, as shown in the accompanying diagram. Find the number of degrees in the acute angle formed by the intersection of Walnut Street and Elm Street.



5. $\triangle ABC$ is similar to $\triangle DEF$. The ratio of the length of $\overline{AB}$ to the length of $\overline{DE}$ is $3:1$. Which ratio is also equal to $3:1$?

   (A) $\dfrac{\text{m}\angle A}{\text{m}\angle D}$

   (B) $\dfrac{\text{m}\angle B}{\text{m}\angle F}$

   (C) $\dfrac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF}$

   (D) $\dfrac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF}$

6. Which set of numbers can not be the measures of the three sides of a triangle?

   (A) $\{2, 3, 4\}$ (B) $\{3, 4, 6\}$

   (C) $\{5, 7, 12\}$ (D) $\{5, 8, 12\}$

7. If the diagonals of a quadrilateral do *not* bisect each other, then the quadrilateral could be a

   (A) rectangle (B) rhombus

   (C) square (D) trapezoid

8. In rhombus $ABCD$, the measure, in inches, of $\overline{AB}$ is $3x + 2$ and $\overline{BC}$ is $x + 12$. Find the number of inches in the length of $\overline{DC}$.

9. Find the length of a diagonal of the square whose side is 10.

10. Which statement is not true for all parallelogram?

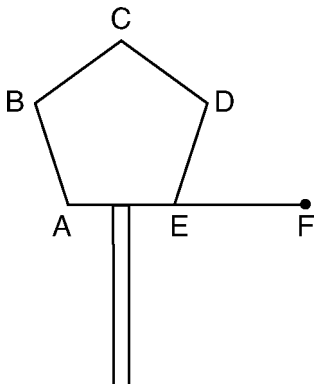
(A) Opposite sides are parallel.

(B) Opposite sides are congruent.

(C) The diagonals bisect each other.

(D) The diagonals are congruent.

11. One piece of the birdhouse that Natalie is building is shaped like a regular pentagon, as shown in the accompanying diagram.



If side *AE* is extended to point *F*, what is the measure of exterior angle *DEF*?

(A) 36° (B) 72°

(C) 108° (D) 144°

12. The length of a side of a square window in Jessica's bedroom is represented by $2x - 1$. Which expression represents the area of the window?

(A) $2x^2 + 1$ (B) $4x^2 + 1$

(C) $4x^2 + 4x - 1$ (D) $4x^2 - 4x + 1$

13. The perimeter of an equilateral triangle varies directly as the length of a side. When the length of a side is doubled, the perimeter of the triangle is

(A) halved

(B) doubled

(C) multiplied by 3

(D) divided by 3

14. The formula for the volume of a right circular cylinder is $V = \pi r^2 h$. The value of h can be expressed as

(A) $\frac{V}{\pi} r^2$ (B) $\frac{V}{\pi r^2}$

(C) $\frac{\pi r^2}{V}$ (D) $V - \pi r^2$

15. The sides of $\triangle ABC$ are 2, 3, and 4. Which set of numbers could represent the sides of a triangle similar to $\triangle ABC$?

(A) $\{5, 6, 7\}$ (B) $\{6, 9, 16\}$

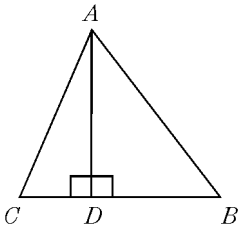
(C) $\{12, 13, 14\}$ (D) $\{20, 30, 40\}$

16. A child who is 4 feet tall casts a 6-foot shadow at the same time that a nearby tree casts a 30-foot shadow. What is the height, in feet, of the tree?

17. In $\triangle ABC$, altitude $\overline{AD}$ is drawn to base $\overline{BC}$. If $AD = 12$, $AB = 15$, and $AC = 13$, what is BC?

(A) 5 (B) 9

(C) 14 (D) 42

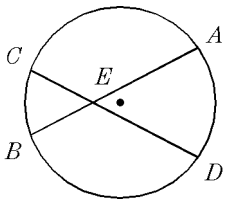


18. The length of the hypotenuse of a right triangle is $\sqrt{15}$ and the length of one leg is 3. What is the length of the other leg?

(A) 6 (B) 9

(C) $\sqrt{6}$ (D) $3\sqrt{2}$

19. In the accompanying diagram, chords $\overline{AB}$ and $\overline{CD}$ intersect at E. If $m\widehat{AD} = 70$ and $m\widehat{BC} = 40$, find $m\angle AED$.



20. In parallelogram $ABCD$, the coordinates of A are $(7, 3)$ and of C are $(5, -1)$. What are the coordinates of the intersection of the diagonals?

21. In a plane, what is the total number of points 3 units from the line whose equation is $x = 4$ and 3 units from point $(4, -2)$?

22. In $\triangle ABC$, D is a point on $\overline{AC}$ such that $\overline{BD}$ is a median. Which statement must be true?

(A) $\triangle ABD \cong \triangle CBD$

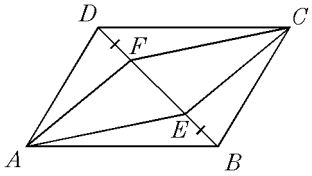
(B) $\angle ABD \cong \angle CBD$

(C) $\overline{AD} \cong \overline{CD}$

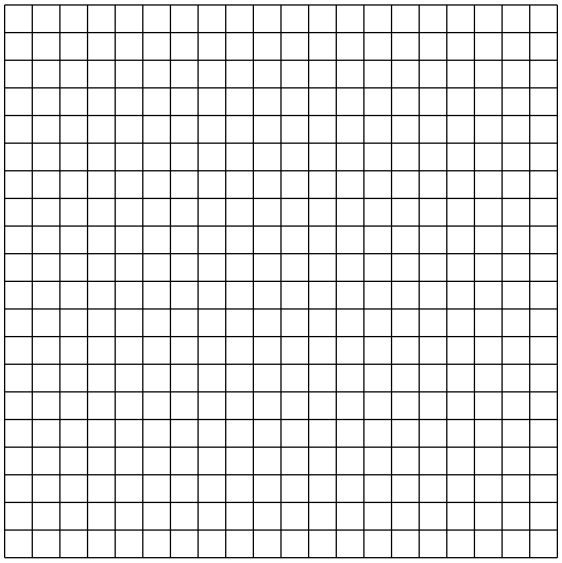
(D) $\overline{BD} \perp \overline{AC}$

23. Given: parallelogram $ABCD$, $\overline{DFEB}$, and $\overline{DF} \cong \overline{BE}$.

Prove: $AECF$ is a parallelogram.

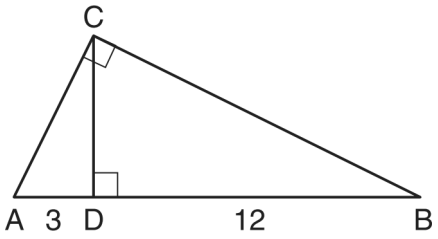


24. Quadrilateral $ABCD$ has vertices $A(2, 3)$, $B(7, 10)$, $C(9, 4)$, and $D(4, -3)$. Prove that $ABCD$ is a parallelogram but *not* a rhombus. [The use of the accompanying grid is optional.]



25. A treasure map shows a treasure hidden in a park near a tree and a statue. The map indicates that the tree and the statue are 10 feet apart. The treasure is buried 7 feet from the base of the tree and also 5 feet from the base of the statue. How many places are possible locations for the treasure to be buried? Draw a diagram of the treasure map, and indicate with an **X** *each* possible location of the treasure.

26. In the diagram below of right triangle ABC, altitude $\overline{CD}$ is drawn to hypotenuse $\overline{AB}$.



If $AD = 3$ and $DB = 12$, what is the length of altitude $\overline{CD}$?

(A) 6 (B) $6\sqrt{5}$

(C) 3 (D) $3\sqrt{5}$

27. Using a compass and straightedge, construct a line perpendicular to line ℓ through point P. [Leave all construction marks.]