Name: _____

Geometry Regents Prep Spring 2010 Assignment

1. [ ]

Which is an equation of the line that passes through the point (1, 4) and has a slope of 3?

A. $y = 3x + 4$

B. $y = \dfrac{1}{3} x + 4$

C. $y = 3x - 1$

D. $y = 3x + 1$

2. [ ]

What is the slope of the line that passes through the points (1, 3) and (3, 7)?

A. $\dfrac{1}{2}$

B. 2

C. $\dfrac{1}{4}$

D. 4

3. [ ]

What is the slope of a line that is perpendicular to the line whose equation is $y = 4x + 1$?

A. $-\dfrac{1}{4}$

B. $\dfrac{1}{4}$

C. -4

D. 4

4. [ ]

Which is an equation of a line parallel to the line whose equation is $3y = 2x + 3$?

A. $3y = -2x + 1$

B. $y = \dfrac{2}{3} x + 3$

C. $y = \dfrac{3}{2} x - 3$

D. $2y = 3x + 3$

5. [ ]

The coordinates of the vertices of rhombus $ABCD$ are $A(1, 1)$, $B(5, 3)$, $C(7, 7)$, and $D(3, 5)$. Find the coordinates of the point of intersection of the diagonals.

A. (3, 4)   C. (4, 2)

B. (4, 4)   D. (5, 6)

6. [ ]

The midpoint of $\overline{AB}$ is M. If the coordinates of A are (2, -6) and the coordinates of M are (5, -1), what are the coordinates of B?

A. (3, 5)

B. (-4, -8)

C. (8, 4)

D. $(\dfrac{7}{2}, -\dfrac{7}{2})$

7. [ ]

The length of the line segment connecting (2, -2) and (-3, -1) is

A. $\sqrt{10}$

B. 2

C. $\sqrt{26}$

D. $\sqrt{34}$

8.

Determine the distance between point *A*(-1,-3) and point *B*(5,5).

[   ] units

Write an equation of the perpendicular bisector of $\overline{AB}$.

$y =$ [   ] $x +$ [   ]

9. [   ]

Find the area of a triangle whose vertices are (1, 2), (8, 2), and (1, 6).

A. 14   C. 28
B. 24   D. 48

10. [   ]

Which letter has *both* line and point symmetry?

A. **A**
B. **S**
C. **Z**
D. **H**

11. [   ]

Which letter has *only* horizontal line symmetry?
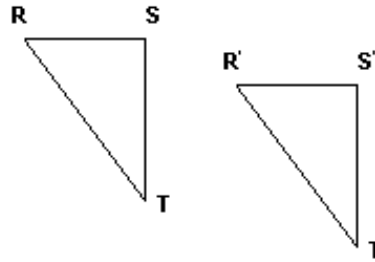
A. **A**
B. **D**
C. **H**
D. **F**

12. [   ]

Figure 1

In the diagram, $\triangle R'S'T'$ is the image of $\triangle RST$. Which type of transformation is shown in this diagram?

A. dilation   C. rotation
B. reflection   D. translation

13. [   ]

If a rectangle is *not* a square, what is the greatest number of lines of symmetry that can be drawn?

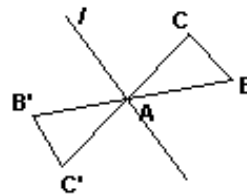A. 1   C. 3
B. 2   D. 4

14. [   ]

Figure 2

The transformation of $\triangle ABC$ to $\triangle AB'C'$ is shown in the accompanying diagram. This transformation is an example of a

A. line reflection in line *l*
B. rotation about point *A*
C. dilation
D. translation

15. ☐

In which quadrant does the image of (4, -7) lie after the translation that shifts (x, y) to $(x - 6, y + 3)$?

A. I   C. III
B. II   D. IV

16. ☐

What is the image of (-4, -5) when reflected in the x-axis?

A. (5, -4)
B. (-5, -4)
C. (-4, 5)
D. (4, -5)

17. ☐

What are the coordinates of R', the image of $R(-4, 3)$ after a reflection in the line whose equation is $y = x$?

A. (-4, -3)   C. (4, 3)
B. (3, -4)   D. (-3, 4)

18. ☐

Chinese Food

Like
160°

No opinion

Dislike
140°

Figure 3

In a recent poll, 600 people were asked whether they liked Chinese food. A circle graph was constructed to show the results. The central angles for two of the three sectors are shown in the accompanying diagram. How many people had no opinion?

A. 30   C. 100
B. 60   D. 300

19. ☐

The accompanying circle graph shows how the Marino family spends its income each month.

Insurance
10%

Mortgage
40%

Food
25%

Utilities
20%

Auto
5%
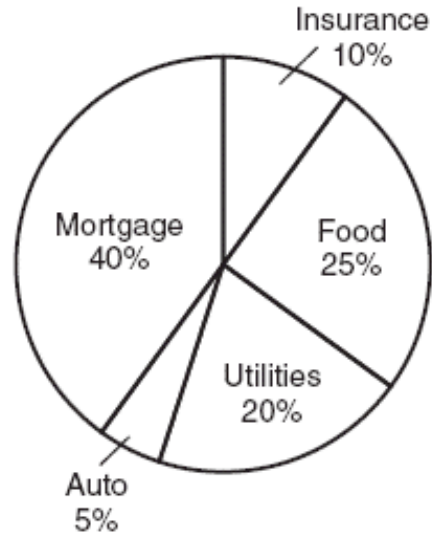
What is the measure, in degrees, of the central angle that represents the percentage of income spent on food?

A. 25   C. 90
B. 50   D. 360

20.

The accompanying diagram shows the path of a cart traveling on a circular track of radius 2.40 meters. The cart starts at point A and stops at point B, moving in a counterclockwise direction. What is the length of minor arc AB, over which the cart traveled, to the *nearest tenth of a meter*?
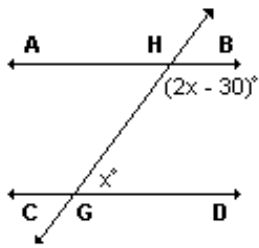

B

2.40 m   165°

A
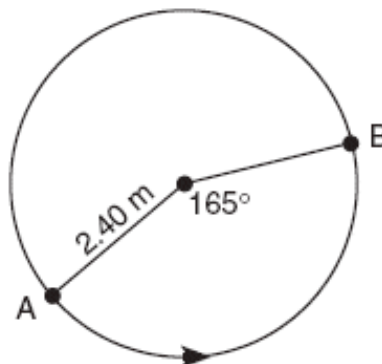
Answer: ☐ m

21. ☐

Figure 4

In the diagram, transversal $\overleftrightarrow{GH}$ intersects parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$, m∠DGH = x, and m∠BHG = 2x − 30. Find the value of x.

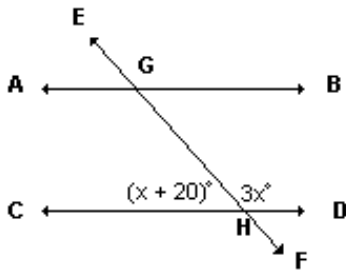A. 30   C. 70
B. 50   D. 110

22. ☐

Figure 5

In the diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are intersected by transversal $\overleftrightarrow{EF}$ at G and H, respectively. If m∠CHG = x + 20 and m∠DHG = 3x, find the value of x.

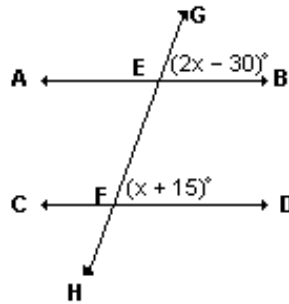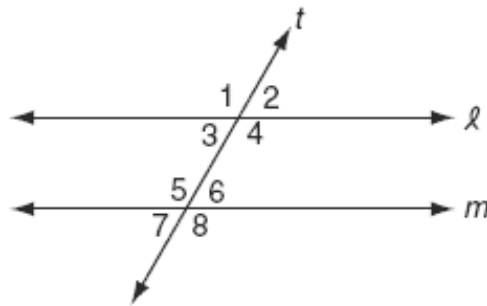A. 17.5   C. 50
B. 40   D. 90

23. ☐

Figure 6

In the diagram, parallel lines $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are cut by transversal $\overleftrightarrow{GH}$ at E and F, respectively. If m∠GEB = (2x − 30) and m∠EFD = (x + 15), find the value of x.

A. 25   C. 45
B. 35   D. 65

24. ☐

In the accompanying diagram, line ℓ is parallel to line m, and line t is a transversal.

Which must be a true statement?
A. m∠1 + m∠4 = 180
B. m∠1 + m∠8 = 180
C. m∠3 + m∠6 = 180
D. m∠2 + m∠5 = 180

25. ☐

The measures of the three angles of a triangle are represented by x, 3x, and x + 30. Find the value of x.

A. 15   C. 42
B. 30   D. 65

26.

A girls 5 feet tall casts a shadow of 2 feet. At the same time, a nearby tree casts a shadow of 24 feet. How tall is the tree?

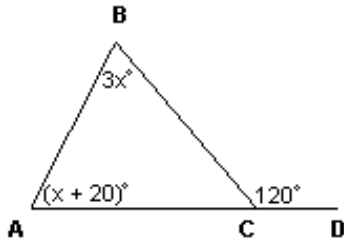A. 9 feet   C. 60 feet

B. 24 feet   D. 120 feet

27.

Figure 7

In the diagram, $m\angle A = x + 20$, $m\angle B = 3x$, and $\angle BCD$ is an exterior angle formed by extending $\overline{AC}$ to point D, and $m\angle BCD = 120$. Find the value of x.

A. 10   C. 35

B. 25   D. 40

28.

Which property is *not* true for *all* parallelograms?

A. Opposite angles are congruent.

B. Consecutive angles are supplementary.

C. Opposite sides are congruent.

D. Diagonals are congruent.

29.

A parallelogram *must* be a rhombus if the

A. diagonals are perpendicular

B. opposite angles are congruent

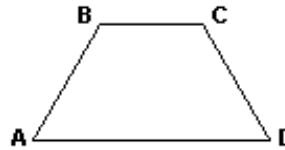C. diagonals are congruent

D. opposite sides are congruent

30.

Figure 8

In the diagram of isosceles trapezoid $ABCD$, $AB = CD$. The measure of $\angle B$ is 40° more than the measure of $\angle A$. Find $m\angle A$ and $m\angle B$.

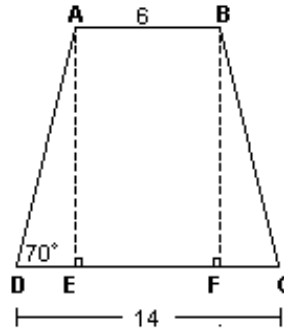$m\angle A =$ _____ and $m\angle B =$ _____ .

31.

Figure 9

In isosceles trapezoid $ABCD$, $m\angle D = 70$, $AB = 6$, and $DC = 14$.

(a) $DE =$ _____ units.

(b) To the *nearest integer*, altitude $AE =$ _____ units.

(c) The area of trapezoid $ABCD =$ _____ square units.

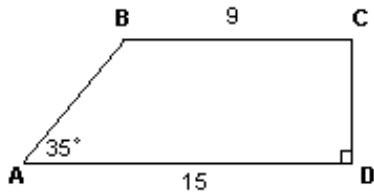(d) To the *nearest integer*, $AD =$ _____ units.

32.

Figure 10

In the diagram of trapezoid $ABCD$, $\overline{CD} \perp \overline{AD}$, $BC = 9$, $AD = 15$, and m$\angle A = 35$.

(a) To the *nearest tenth*, the area of $ABCD$ is [ ] square units.

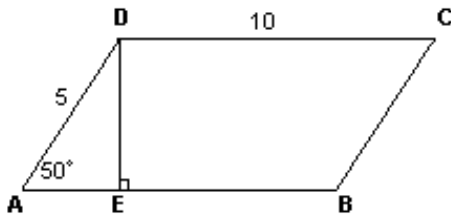(b) To the *nearest tenth*, the perimeter of $ABCD$ is [ ] units.

33.

Figure 11

In the diagram of parallelogram $ABCD$, m$\angle A = 50$, $DC = 10$, and $AD = 5$. $\overline{DE}$ is an altitude.

(a) To the *nearest tenth*, $DE =$ [ ] units.

(b) To the *nearest tenth*, $AE =$ [ ] units.

(c) To the *nearest integer*, the area of $\triangle AED =$ [ ] square units.

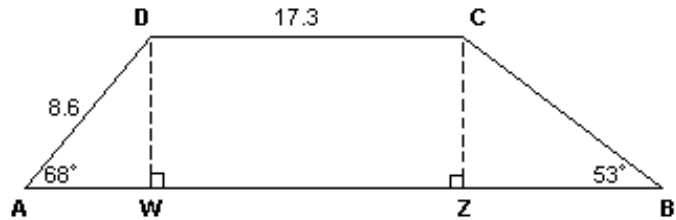(d) To the *nearest integer*, the area of trapezoid $DCBE =$ [ ] square units.

34.

Figure 12

In the diagram, $ABCD$ is a trapezoid with altitudes DW and CZ drawn, $CD = 17.3$, $DA = 8.6$, m$\angle A = 68$, and m$\angle B = 53$. To the *nearest tenth*, the perimeter of $ABCD$ is [ ] units.
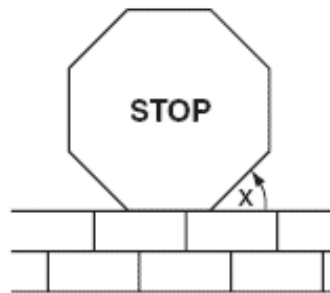
35. [ ]

What is the sum, in degrees, of the measures of the interior angles of a stop sign, which is in the shape of an octagon?

A. 360   C. 1,440

B. 1,080   D. 1,880

36. [ ]

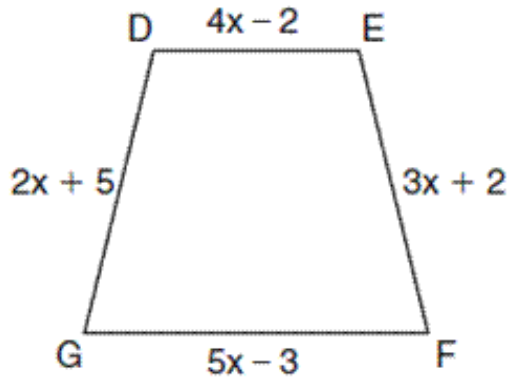A stop sign in the shape of a regular octagon is resting on a brick wall, as shown in the accompanying diagram.

What is the measure of angle x?

A. 45°   C. 120°

B. 60°   D. 135°

37.

In the diagram below of isosceles trapezoid *DEFG*, $\overline{DE} \parallel \overline{GF}$, *DE* = 4*x* − 2, *EF* = 3*x* + 2, *FG* = 5*x* − 3, and *GD* = 2*x* + 5. Find the value of *x*.
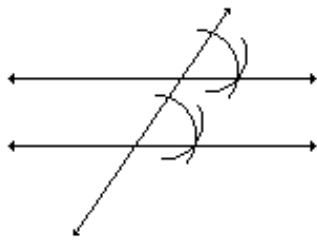

Answer: *x* = _____

38. ☐

Figure 13

Which statement is illustrated in the construction?

A. Through a point not on a given line, exactly one line can be drawn perpendicular to the given line.

B. If two lines cut by a transversal form congruent alternate interior angles, then the two lines are parallel.

C. If two lines cut by a transversal form congruent corresponding angles, then the two lines are parallel.

D. If two lines cut by a transversal form same side interior angles that are supplementary, then the two lines are parallel.
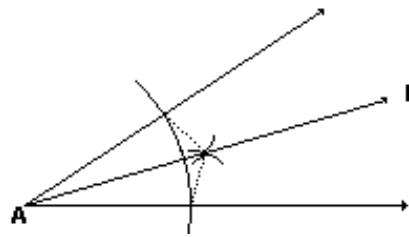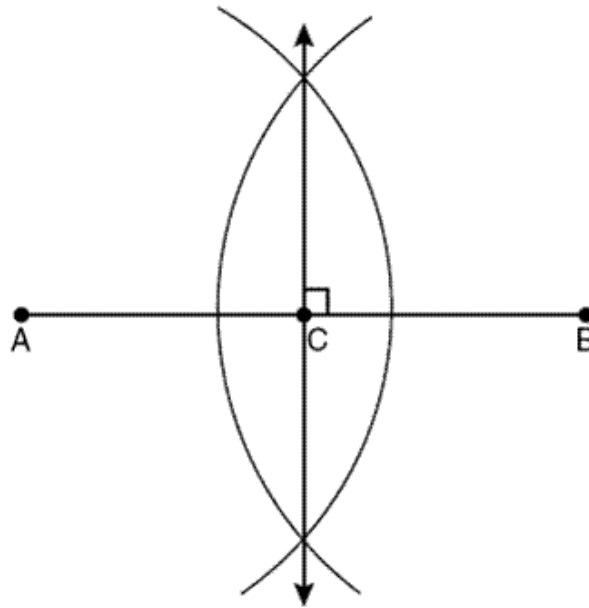
39. ☐

Figure 14

In the diagram, the bisector of an angle has been constructed. In proving this construction, which reason is used for the congruence involved?

A. ASA   C. AAS

B. SSS   D. SAS

40. ☐

The diagram below shows the construction of the perpendicular bisector of $\overline{AB}$.

Which statement is *not* true?

A. *AC* = *CB*

B. $CB = \frac{1}{2} AB$

C. *AC* = 2*AB*

D. *AC* + *CB* = *AB*

41. [ ]

What is the locus of points at a given distance from a line?

A. 1 point   C. 1 circle
B. 2 points   D. 2 parallel lines

42. [ ]

The locus of points equidistant from a single point is which of the following?

A. A circle   C. Two parallel lines
B. A perpendicular bisector   D. One parallel line

43. [ ]

The locus of points equidistant from two points is which of the following?

A. A circle   C. Two parallel lines
B. A perpendicular bisector   D. A midpoint

44. [ ]

The locus of points equidistant from two intersecting lines is which of the following?

A. A circle

B. A perpendicular bisector

C. Two intersecting lines that bisect the 4 angles formed by the original intersecting lines.

D. An angle bisector

45. [ ]

In right triangle ABC, hypotenuse $AB = 10$ and m$\angle B = 53$. Find AC to the *nearest integer*.
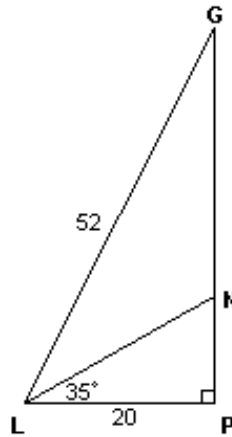
A. 6   C. 13
B. 8   D. 15

46.

Figure 15

In the diagram of right triangle LPG: $\overline{GNP} \perp \overline{PL}$, $LG = 52$, $LP = 20$, and m$\angle NLP = 35$.

(a) To the *nearest integer*, $PN = $ [ ] .

(b) To the *nearest integer*, $GN = $ [ ] .

(c) To the *nearest degree*, m$\angle GLN = $ [ ] .

47.

In the accompanying diagram, x represents the length of a ladder that is leaning against a wall of a building, and y represents the distance from the foot of the ladder to the base of the wall. The ladder makes a 60° angle with the ground and reaches a point on the wall 17 feet above the ground. Find the number of feet in x and y. Round your answers to the nearest *tenth* of a foot.
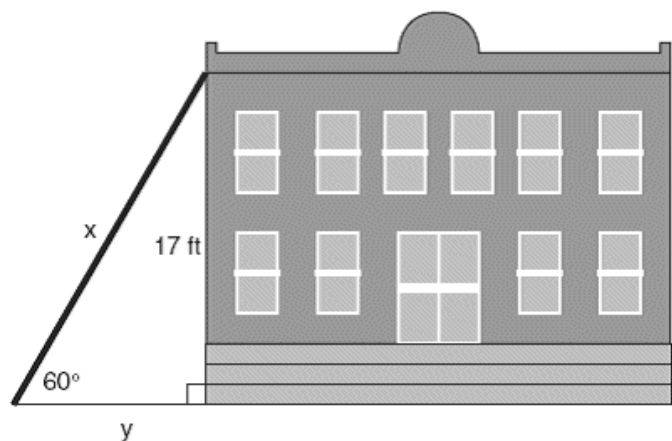
$x = $ [ ] feet

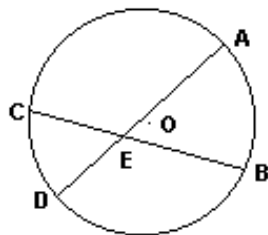$y = $ [ ] feet

48.

Figure 16

In the diagram of circle O, $m\overset{\frown}{AB} = 64$ and $m\angle AEB = 52$. What is the measure of $\overset{\frown}{CD}$?

A. 104°   C. 52°
B. 80°   D. 40°

49.

The accompanying diagram shows a child's spin toy that is constructed from two chords intersecting in a circle. The curved edge of the larger shaded section is one-quarter of the circumference of the circle, and the curved edge of the smaller shaded section is one-fifth of the circumference of the circle.
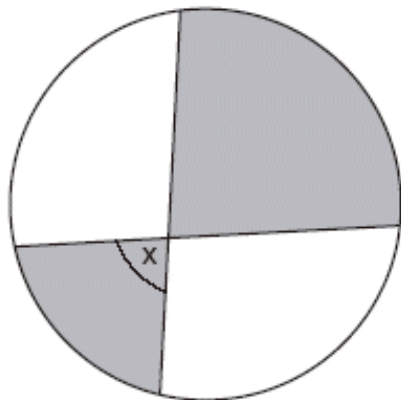
What is the measure of angle x?
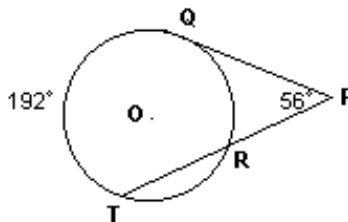
A. 40°   C. 81°
B. 72°   D. 108°

50.

Figure 17

In the diagram of circle O, $\overline{PQ}$ is tangent to O at Q and $\overline{PRT}$ is a secant. If $m\angle P = 56$ and $m\overset{\frown}{QT} = 192$, find $m\overset{\frown}{QR}$.

A. 80   C. 248
B. 136   D. 304

51.

The accompanying diagram shows a circular machine part that has rods $\overline{PT}$ and $\overline{PAR}$ attached at points T, A, and R, which are located on the circle. $\overline{PT}$ is tangent to the circle at point T; $m\overset{\frown}{TA} : m\overset{\frown}{AR} : m\overset{\frown}{RT} = 1:3:5$ where $\overset{\frown}{RT}$ refers to the major arc; $RA = 12$ centimeters; and $PA = 5$ centimeters.
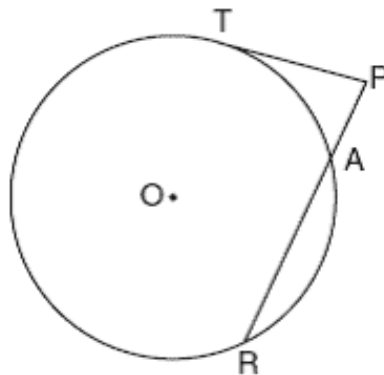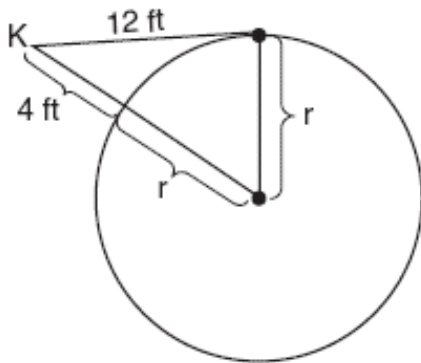

(a) Find the measure of $\angle P$, in degrees.

$m\angle P = $ [   ] °

(b) Find the length of rod $\overline{PT}$, to the *nearest tenth of a centimeter*.

$PT = $ [   ] cm

52. ☐

Kimi wants to determine the radius of a circular pool without getting wet. She is located at point *K*, which is 4 feet from the pool and 12 feet from the point of tangency, as shown in the accompanying diagram.

What is the radius of the pool?
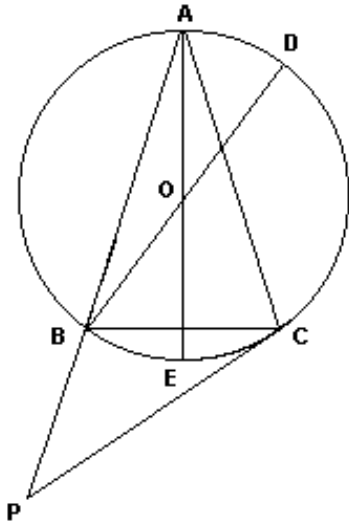
A. 16 ft
B. 20 ft
C. 32 ft
D. $4\sqrt{10}$ ft

53.

Figure 18

In the diagram, isosceles triangle *ABC* is inscribed in circle *O*, and vertex angle *BAC* measures 40°. Tangent $\overline{PC}$, secant $\overline{PBA}$, and diameters $\overline{BD}$ and $\overline{AE}$ are drawn.

(a) m $\overset{\frown}{BC}$ = [   ]

(b) m∠*ABD* = [   ]

(c) m∠*DOE* = [   ]

(d) m∠*P* [   ]

(e) m∠*ACP* [   ]

54.

Figure 19

In the diagram of circle O, the ratio $m\overset{\frown}{BC} : m\overset{\frown}{CA} : m\overset{\frown}{AN} : m\overset{\frown}{NB}$ is 5:4:1:2, chord $\overline{CB}$ is extended to external point M, chords $\overline{AB}$ and $\overline{CN}$ intersect at D, and tangent $\overrightarrow{MN}$ is drawn.

(a) $m\overset{\frown}{BC}$ = [   ]

(b) $m\angle ABC$ = [   ]

(c) $m\angle NMC$ = [   ]

(d) $m\angle NDA$ = [   ]

(e) $m\angle MND$ = [   ]

55. [   ]

The measure of the altitude of an equilateral triangle whose side has length 6 is

A. $\sqrt{3}$
B. $2\sqrt{3}$
C. $3\sqrt{3}$
D. $4\sqrt{3}$

56. [   ]

Which set of numbers could *not* represent the lengths of the sides of a right triangle?

A. {3, 4, 5}
B. {6, 9, 12}
C. {5, 12, 13}
D. {8, 15, 17}

57.

To get from his high school to his home, Jamal travels 5.0 miles east and then 4.0 miles north. When Sheila goes to her home from the same high school, she travels 8.0 miles east and 2.0 miles south. What is the measure of the shortest distance, to the *nearest tenth of a mile*, between Jamal's home and Sheila's home?
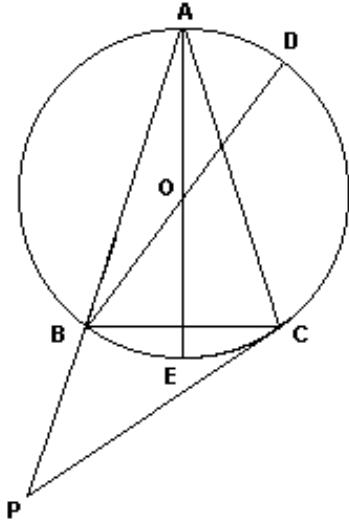
[   ] mile(s)

53.

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(a) m $\overset{\frown}{BC}$ = [_____]

(b) m∠*ABD* = [_____]

(c) m∠*DOE* = [_____]

(d) m∠*P* [_____]

(e) m∠*ACP* [_____]

54.

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(a) $m\overset{\frown}{BC} = $ ☐

(b) $m\angle ABC = $ ☐

(c) $m\angle NMC = $ ☐

(d) $m\angle NDA = $ ☐

(e) $m\angle MND = $ ☐

55. ☐

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☐ mile(s)