Cumulative Review 11 (Ch 1-11)

Part I – Multiple Choice. Each question in this part is worth 2 points. No partial credit will be awarded.

_____1.   The center and radius of the given circle $(x-3)^2 + (x+8)^2 = 39$ are:

1) $(3,-8), r = 39$

2) $(-3,-8), r = \sqrt{39}$

3) $(-3,8), r = \sqrt{39}$

4) $(3,-8), r = \sqrt{39}$

_____2.   A line segment on the coordinate plane has endpoints $(2,4)$ and $(4,y)$. The midpoint of the segment is point (3,7). What is the value of y?

1) 11

2) 10

3) 5

4) -2

_____3.   Which statement is an example of a biconditional statement?

1)   If Craig has money, he buys a car.

2)   Craig buys a car if and only if he has money.

3)   Craig has money or he buys a car.
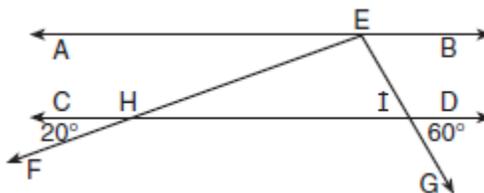
4)   Craig has money and he buys a car.

_____4. In the diagram of $\triangle ABC$ below, $\overline{AB} \cong \overline{AC}$. The measure of $\angle B$ is 40°.
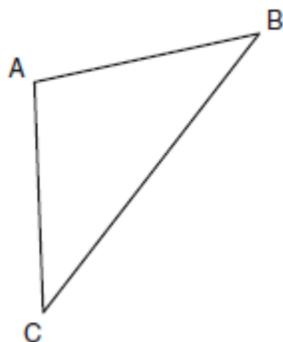
What is the measure of $\angle A$?

1) 40°

2) 50°

3) 70°

4) 100°

_____5. In the accompanying diagram, $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$. From point E on $\overleftrightarrow{AB}$, transversals $\overrightarrow{EF}$ and $\overrightarrow{EG}$ are drawn, intersecting $\overleftrightarrow{CD}$ at H and I, respectively.

If $m\angle CHF = 20$ and $m\angle DIG = 60$, what is $m\angle HEI$?

1) 60

2) 80

3) 100

4) 120

_____6. The accompanying diagram shows a 24-foot ladder leaning against a building. A steel brace extends from the ladder to the point where the building meets the ground. The brace forms a right angle with the ladder.
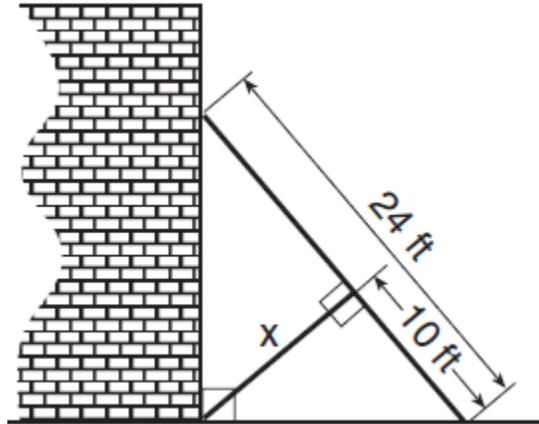
If the steel brace is connected to the ladder at a point that is 10 feet from the foot of the ladder, which equation can be used to find the length, x, of the steel brace?

1) $\dfrac{10}{x} = \dfrac{x}{14}$

2) $\dfrac{10}{x} = \dfrac{x}{24}$

3) $10^2 + x^2 = 14^2$

4) $10^2 + x^2 = 24^2$

_____7. A stop sign in the shape of a regular octagon is resting on a brick wall, as shown in the accompanying diagram.
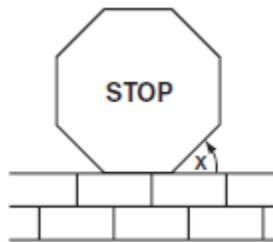
What is the measure of angle x?

1) 45°   3) 120°

2) 60°   4) 135°

_____8.   How many points are equidistant from two parallel lines and also equidistant from two points on one of the lines?

1) 1   3) 3

2) 2   4) 4

_____9.   The coordinates of point R are $(-3, 2)$ and the coordinates of point T are $(4, 1)$. What is the length of $\overline{RT}$?

1) $2\sqrt{2}$

2) $5\sqrt{2}$

3) $4\sqrt{3}$

4) $\sqrt{10}$

_____10. What is an equation of the line that passes through the point $(7, 3)$ and is parallel to the line $4x + 2y = 10$?

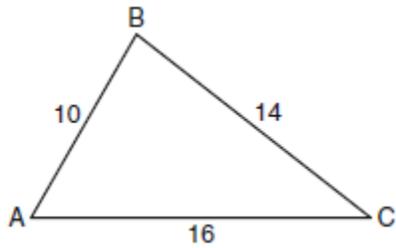1) $y = \frac{1}{2}x - \frac{1}{2}$

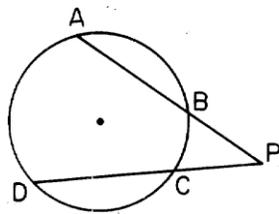2) $y = -\frac{1}{2}x + \frac{13}{2}$

3) $y = 2x - 11$

4) $y = -2x + 17$

11. In the diagram of $\triangle ABC$ below, $AB = 10$, $BC = 14$, and $AC = 16$. Find the perimeter of the triangle formed by connecting the midpoints of the sides of $\triangle ABC$.

12. In the accompanying diagram, $\overline{PBA}$ and $\overline{PCD}$ are secants to the circle. If $m\angle P = 40$ and $m\overarc{AD} = 120$, find $m\overarc{BC}$.
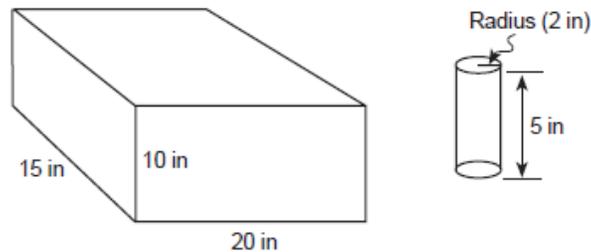
13. In the diagram below of isosceles trapezoid $DEFG$, $\overline{DE} \parallel \overline{GF}$, $DE = 4x - 2$, $EF = 3x + 2$, $FG = 5x - 3$, and $GD = 2x + 5$. Find the value of x.

D   4x − 2   E

2x + 5

3x + 2

G   5x − 3   F
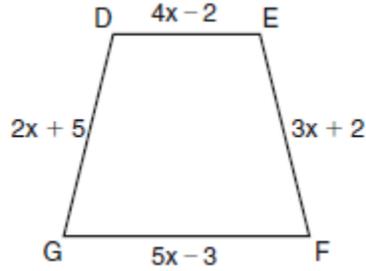
Part III – The problem in this part is worth 4 points. Partial credit will be awarded.

14. In the accompanying diagram, a rectangular container with the dimensions 10 inches by 15 inches by 20 inches is to be filled with water, using a cylindrical cup whose radius is 2 inches and whose height is 5 inches. What is the maximum number of full cups of water that can be placed into the container without the water overflowing the container?

15 in   10 in

20 in

Radius (2 in)

5 in

15 The coordinates of the vertices of trapezoid ABCD are A(3, 0), B(7, 0), C(7, 11) and D(3, 8).

Find: **a) the area of the trapezoid.**

b) the perimeter of the trapezoid.

c) the slope of diagonal $\overline{BD}$.

d) the midpoint of diagonal $\overline{BD}$.