Name _____   Date _____
Mr. Schlansky   Geometry

Equations of Lines and Circles Review Sheet

1. What is an equation of the line that is perpendicular to the line whose equation is $y = \frac{3}{5}x - 2$ and that passes through the point $(3, -6)$?

1) $y = \frac{5}{3}x - 11$

3) $y = -\frac{5}{3}x - 1$

2) $y = -\frac{5}{3}x + 11$

4) $y = \frac{5}{3}x + 1$

2. The equation of a line is $y = \frac{2}{3}x + 5$. What is an equation of the line that is perpendicular to the given line and that passes through the point $(4, 2)$?

1) $y = \frac{2}{3}x - \frac{2}{3}$

3) $y = -\frac{3}{2}x + 7$

2) $y = \frac{3}{2}x - 4$

4) $y = -\frac{3}{2}x + 8$

3. What is an equation of the line that passes through the point $(6, 8)$ and is perpendicular to a line with equation $-3x + 2y = 10$?

1) $y - 8 = \frac{3}{2}(x - 6)$

3) $y + 8 = \frac{3}{2}(x + 6)$

2) $y - 8 = -\frac{2}{3}(x - 6)$

4) $y + 8 = -\frac{2}{3}(x + 6)$

4. What is an equation of a line which passes through $(6, 9)$ and is perpendicular to the line whose equation is $4x - 6y = 15$?

1) $y - 9 = -\frac{3}{2}(x - 6)$

3) $y + 9 = -\frac{3}{2}(x + 6)$

2) $y - 9 = \frac{2}{3}(x - 6)$

4) $y + 9 = \frac{2}{3}(x + 6)$

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5. The line $y = \dfrac{1}{2}x - 2$ is dilated by a scale factor of 2 centered at the origin. Write an equation that represents the image of the line after the dilation.

1) $y = \dfrac{1}{2}x - 4$ 3) $y = x - 4$

2) $y = \dfrac{1}{2}x - 2$ 4) $y = x - 2$

6. The line $y = \dfrac{1}{2}x - 2$ is dilated by a scale factor of 2 and centered at (0,-2). Write an equation that represents the image of the line after the dilation.

1) $y = \dfrac{1}{2}x - 4$ 3) $y = x - 4$

2) $y = \dfrac{1}{2}x - 2$ 4) $y = x - 2$

7. The line $y = 2x - 4$ is dilated by a scale factor of $\dfrac{3}{2}$ and centered at (1,-2). Write an equation that represents the image of the line after the dilation.

1) $y = 2x - 4$
2) $y = 2x - 6$
3) $y = 3x - 4$
4) $y = 3x - 6$

8. The line $y = 2x - 4$ is dilated by a scale factor of $\dfrac{3}{2}$ and centered at the origin. Which equation represents the image of the line after the dilation?
1) $y = 2x - 4$
2) $y = 2x - 6$
3) $y = 3x - 4$
4) $y = 3x - 6$

9. The line $y = 2x - 1$ is dilated centered at (4,1). Which linear equation could be its image?
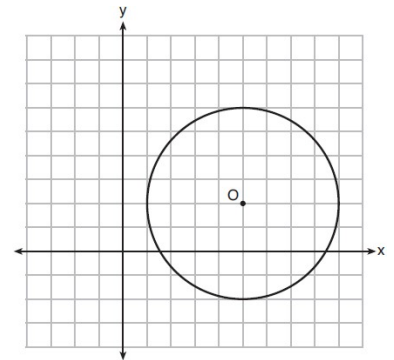1) $-2x + y = 3$ 3) $-x + 2y = 5$
2) $-2x - y = 7$ 4) $-x - 2y = 6$

10. The line $y = \dfrac{2}{3}x + 3$ is dilated centered at the origin. Which linear equation could be its image?

1) $2x + 3y = 7$ 3) $3x - 2y = 7$
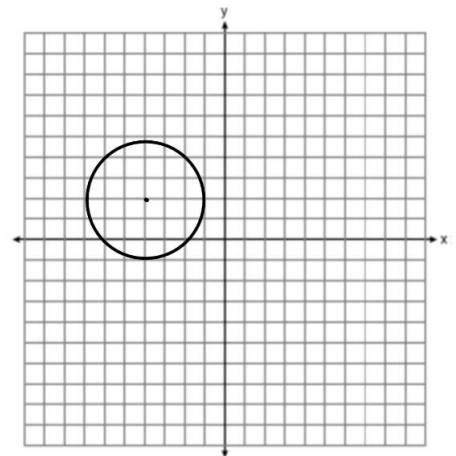
2) $2x - 3y = 7$ 4) $3x + 2y = 7$

11. Which of the following is the equation of the given circle?

$(x - 5)^2 + (y - 2)^2 = 16$

$(x + 5)^2 + (y + 2)^2 = 16$

$(x - 5)^2 + (y - 2)^2 = 4$

$(x + 5)^2 + (y + 2)^2 = 4$

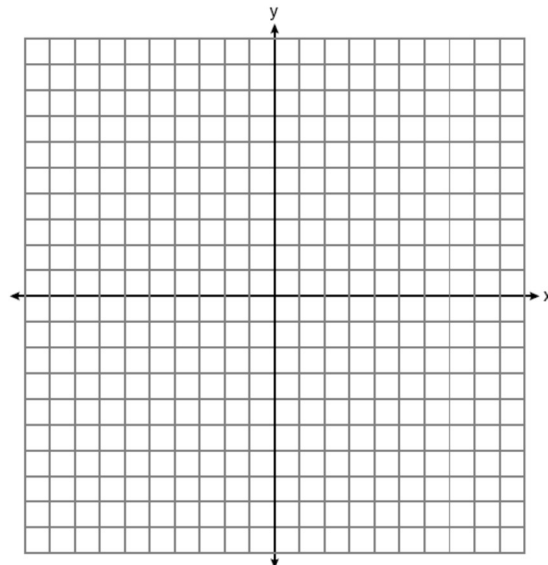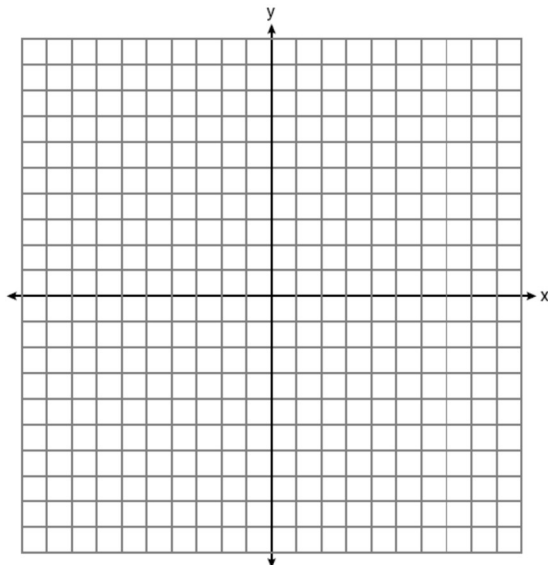12. Which of the following is the equation of the given circle?

$(x - 4)^2 + (y + 2)^2 = 9$

$(x - 4)^2 + (y + 2)^2 = 3$

$(x + 4)^2 + (y - 2)^2 = 9$

$(x + 4)^2 + (y - 2)^2 = 3$

Graph the following circles on the provided graphs

13. $(x - 4)^2 + (y + 1)^2 = 9$ 14. $(x + 3)^2 + (y - 2)^2 = 16$

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15. Find the center and radius of a circle whose equation is $x^2 + y^2 - 2x + 6y + \dfrac{15}{4} = 0$?

1) center = $(-1, 3)$; radius = $\dfrac{25}{4}$

2) center = $(-1, 3)$; radius = $\dfrac{5}{2}$

3) center = $(1, -3)$; radius = $\dfrac{25}{4}$

4) center = $(1, -3)$; radius = $\dfrac{5}{2}$

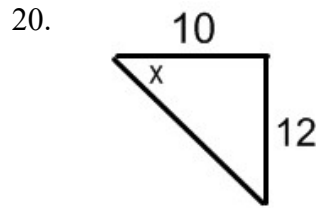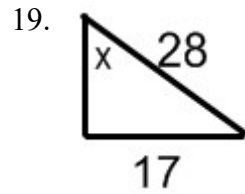16. Find the center and radius of a circle whose equation is $x^2 + y^2 - 16x + 6y + 53 = 0$?
1) center $(-8, 3)$ and radius 20
2) center $(-8, 3)$ and radius $2\sqrt{5}$
3) center $(8, -3)$ and radius 20
4) center $(8, -3)$ and radius $2\sqrt{5}$

Find the center and radius of the following circles:

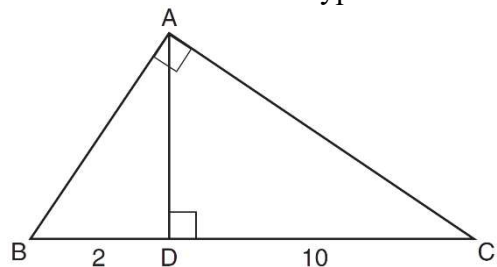17. $x^2 + y^2 + 16x + 6y + 1 = 0$

18. $x^2 + y^2 - 4x + 6y = 15$

Find x in each of the following pictures rounding to the *nearest integer*

19.

28

x

17

20.

10

x

12

21. Triangle ABC shown below is a right triangle with altitude $\overline{AD}$ drawn to the hypotenuse $\overline{BC}$.

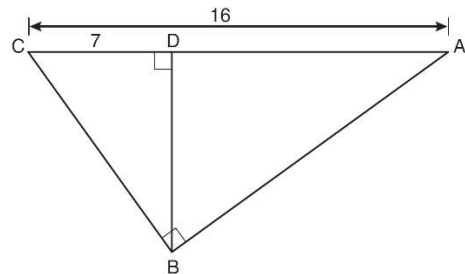If $BD = 2$ and $DC = 10$, what is the length of $\overline{AB}$?
1) $2\sqrt{2}$
2) $2\sqrt{5}$
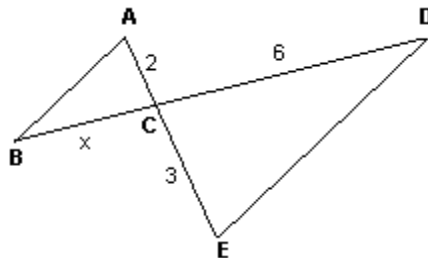3) $2\sqrt{6}$
4) $2\sqrt{30}$

A

B   2   D   10   C

22. In the diagram below of right triangle ABC, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$, $AC = 16$, and $CD = 7$.

What is the length of $\overline{BD}$?
1) $3\sqrt{7}$
2) $4\sqrt{7}$
3) $7\sqrt{3}$
4) 12

16

C   7   D   A

B

23. In the diagram below, $\overline{AB} \parallel \overline{DE}$. If $AC = 2$, $CD = 6$, and $CE = 3$, what is BC?

A   D

2   6

C

B   x

3

E

24. In the diagram below, $\overline{AD}$ intersects $\overline{BE}$ at C, and $\overline{AB} \parallel \overline{DE}$.

If $CD = 6.6$ cm, $DE = 3.4$ cm, $CE = 4.2$ cm, and $BC = 5.25$ cm, what is the length of $\overline{AC}$, to the *nearest hundredth of a centimeter*?

D

B

C

E

A