

9-4 Homework: Applying Algebra to Geometric Situations

1. The line l has the equation $y = -\frac{2}{3}x + 5$. To each line below, circle whether l is parallel, perpendicular, or neither.

(a) parallel perpendicular neither $y = -\frac{2}{3}x - 2$

(b) parallel perpendicular neither $y = \frac{3}{2}x + 9$

(c) parallel perpendicular neither $2x - 3y = 12$

(d) parallel perpendicular neither $3x + 2y = -4$

2. What is the equation of a line through $A(4, 1)$ and parallel to the line $y = \frac{1}{2}x - 5$?
(hint: use the point-slope formula, $y - y_A = m(x - x_A)$)

3. Simplify each expression. (Leave it in radical form if necessary, not a decimal.)

(a) $\sqrt{20}$

(b) $\sqrt{\frac{4}{25}}$

4. Write down the center and radius of each circle.

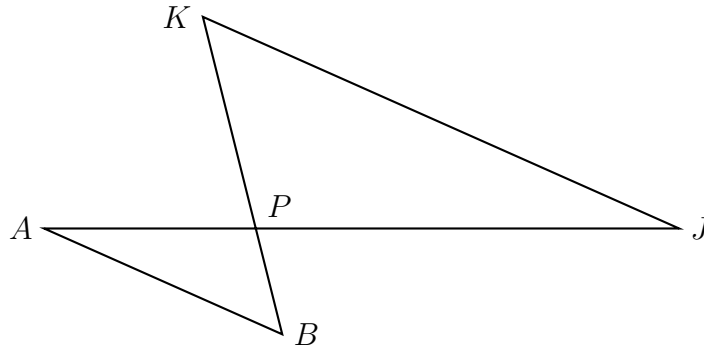
(a) $(x - 1)^2 + (y + 4)^2 = 49$

(c) $(x - 9)^2 + (y + 1)^2 = 7$

(b) $(x + 6)^2 + (y - 1)^2 = 4$

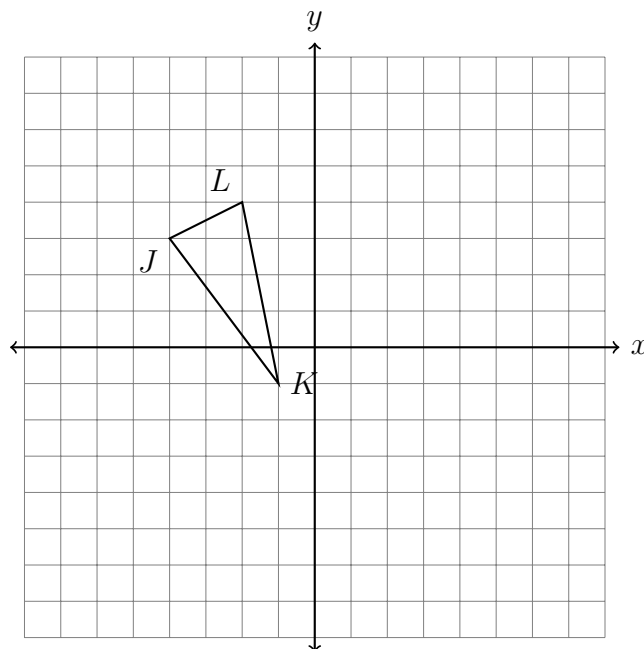
(d) $(x - 1)^2 + (y + 4)^2 = 16$

5. Given $\triangle ABP$ and $\triangle JKP$ as shown below. $\overline{AB} \parallel \overline{JK}$. $AP = 6.3$, $JP = 12.6$, and $JK = 17$. Find AB .



6. The vertices of $\triangle JKL$ have the coordinates $J(-4, 3)$, $K(-1, -1)$, and $L(-2, 4)$, as shown below.

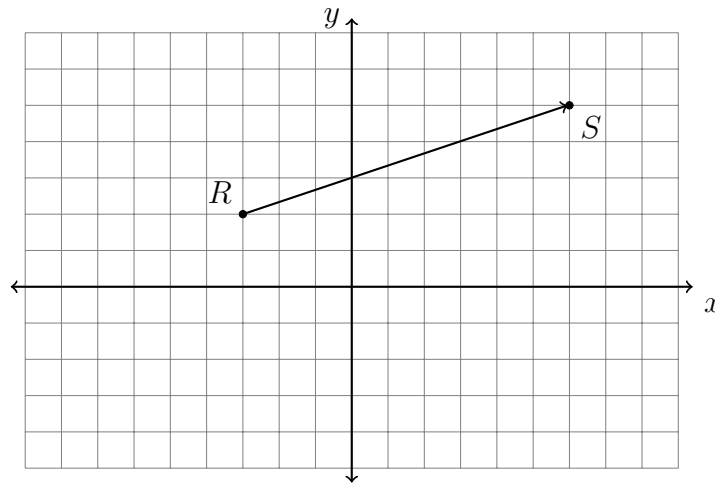
Apply a translation of $(x, y) \rightarrow (x + 5, y + 1)$ to $\triangle JKL$ and then reflect the image across the x -axis. Draw both images $\triangle J'K'L'$ and $\triangle J''K''L''$ on the set of axes below, labeling the vertices.



Name:

7. A translation maps $P(-1, 5) \rightarrow P'(3, -2)$. What is the image of $Q(3, 4)$ under the same translation?

8. As shown below, what is the translation that maps the point $R(-3, 2)$ onto the point $S(6, 5)$?



If two thirds of that translation was performed, what coordinates would R be mapped to?

9. Given $A(-3, 4)$ and $B(1, -4)$, find the length of \overline{AB} . Leave the result in simplified radical form (not a decimal).

10. $\triangle ABC$ undergoes two transformations mapping it onto $\triangle A''B''C''$, as shown below. Specify the two transformations in order. Complete a table showing the coordinates of the translated points.

$$A(-6, -1) \rightarrow$$

$$B(-8, 2) \rightarrow$$

$$C(-1, 3) \rightarrow$$

