

Algebra 1 4.3

Write equations of lines in point-slope form

Write linear equations in different forms

$y = mx + b$
slope-intercept form

point-slope form

standard form

speed dating

0.5

$y - ? = m(x - ?)$

$Ax + By = C$

Quiz 4.1-4.2

no frac./dec.
specific order
GCF

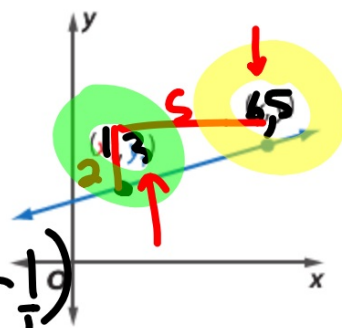
KeyConcept Point-Slope Form

Words

The linear equation $y - y_1 = m(x - x_1)$ is written in point-slope form, where (x_1, y_1) is a given point on a nonvertical line and m is the slope of the line.

Symbols

$$y - y_1 = m(x - x_1)$$



$$y - 5 = \frac{2}{5}(x - 6) \quad y - 3 = \frac{2}{5}(x - 1)$$

$$\begin{aligned} y - 5 &= \frac{2}{5}x - \frac{12}{5} \\ +5 & \quad +5 \\ y &= \frac{2}{5}x + 2\frac{3}{5} \end{aligned}$$

$$\begin{aligned} y - 3 &= \frac{2}{5}x - \frac{2}{5} \\ +3 & \quad +3 \\ y &= \frac{2}{5}x + 2\frac{3}{5} \end{aligned}$$

Guided Practice

1. Write an equation in point-slope form for the line that passes through $(-2, 1)$ with a slope of -6 . Then graph the equation.

Guided Practice

3. Write $y + 6 = -3(x - 4)$ in slope-intercept form.

$$\begin{array}{r} y + 6 = -3x + 12 \\ -6 \qquad -6 \\ \hline y = -3x + 6 \end{array}$$

Example 3 Slope-Intercept Form

Write $y + 3 = \frac{3}{2}(x + 1)$ in slope-intercept form.

$$y = mx + b$$

Example 4 Point-Slope Form and Standard Form

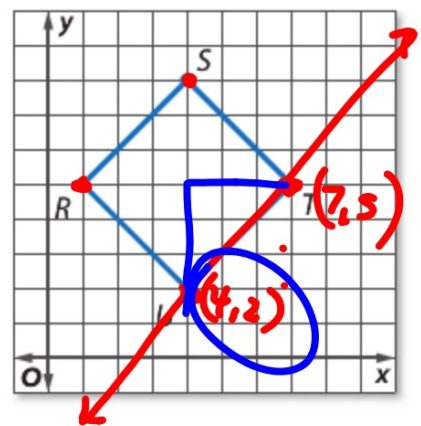
GEOMETRY The figure shows square $RSTU$.

- a. Write an equation in point-slope form for the line containing side $\overline{TU}$.

$$m = \frac{3}{2}$$

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

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



- b. Write an equation in standard form for the same line.

SF:

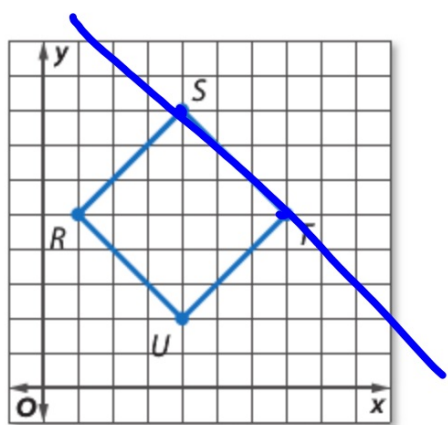
In order

Integers

GCF

Guided Practice

4A. Write an equation in point-slope form of the line containing side $\overline{ST}$.



4B. Write an equation in standard form of the line containing $\overline{ST}$.

Standard Form:
In order
No fractions
No common factors
A=pos

$$Ax + By = c$$

integers

$$2x - 5y = 13$$

↑ ↑ ↑
A=2 B=-5 C=13

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

$$3x + 1y = 5$$

A=3 B=1 C=5

$$y = -\frac{1}{2}x + 5$$

$+\frac{1}{2}x$ $+\frac{1}{2}x$

$$2 \cdot \frac{1}{2}x + 2 \cdot y = 2 \cdot 5$$

$\frac{1}{2}$

$$x + 2y = 10$$

$A=1$ $B=2$ $C=10$

$$y = -\frac{3}{4}x + 7$$

$+\frac{3}{4}x$ $+\frac{3}{4}x$

$$4 \cdot \frac{3}{4}x + 4 \cdot y = 4 \cdot 7$$

$$3x + 4y = 28$$

$$\left. \begin{array}{l} -\frac{4x}{-1} + \frac{6y}{-1} = \frac{14}{-1} \\ \frac{4x}{2} - \frac{6y}{2} = \frac{-14}{2} \end{array} \right\} \begin{array}{l} -\frac{4x}{-2} + \frac{6y}{-2} = \frac{14}{-2} \\ 2x - 3y = -7 \end{array}$$

$$2x - 3y = -7$$

$$A = 2 \quad B = -3 \quad C = -7$$

WB prac 4.3 p52

odds +22