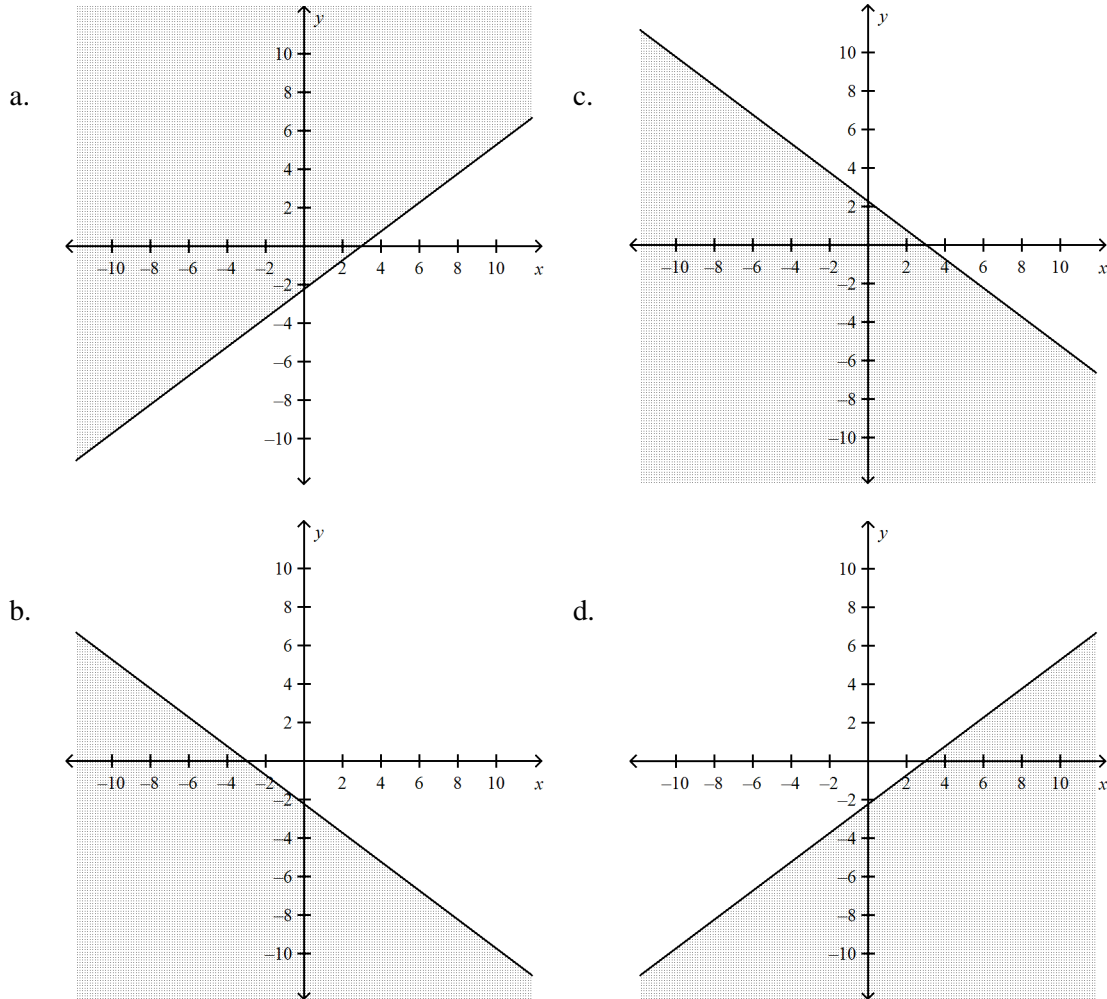


## 1AL2.2: Linear Inequalities - Intercepts and Graphing

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### MULTIPLE CHOICE

1. Which of the following is the graph of the inequality:  $y \leq \frac{3}{4}x - \frac{9}{4}$ ?

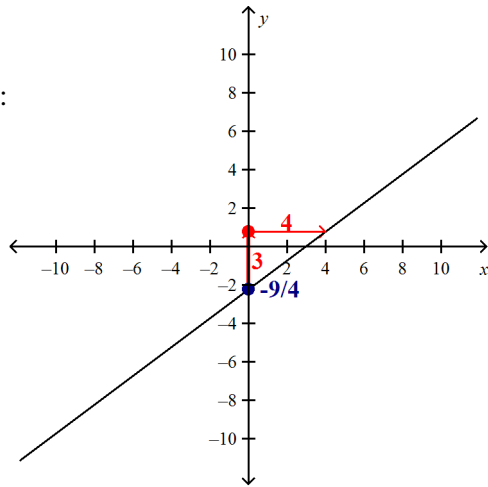


ANS: D

The slope  $m = \frac{3}{4}$ .

The y-intercept is:  $-\frac{9}{4}$

Graph:



We pick a point not on the graph - say (0,0) and test it:  $0 \leq \frac{3}{4} \cdot 0 - \frac{9}{4}$  ?

$$0 \leq -\frac{9}{4} ?$$

False

So the point (0,0) does NOT lie in the shaded region.

|   | Feedback              |
|---|-----------------------|
| A | Wrong side is shaded. |
| B | Wrong line.           |
| C | Wrong line.           |
| D | Correct!              |

PTS: 3

DIF: Grade 8

REF: 1ALG.6.0

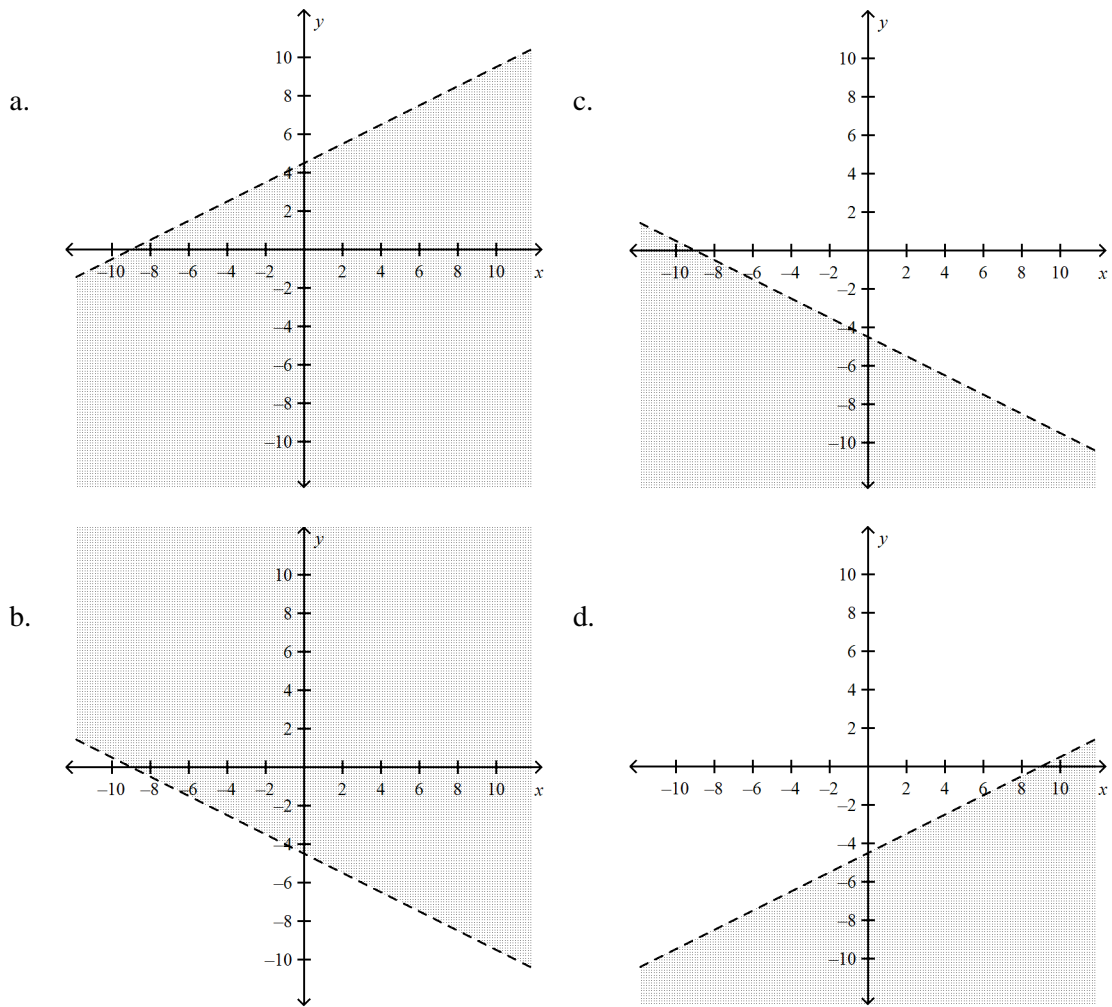
OBJ: Students graph a linear equation and compute the x- and y- intercepts (e.g., graph  $2x + 6y = 4$ ).

They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by  $2x + 6y < 4$ ).

TOP: Algebra 1

KEY: graph | lines |slope-intercept form | inequality

2. Which of the following is the graph of the inequality:  $y < -0.5x - 4.5$ ?

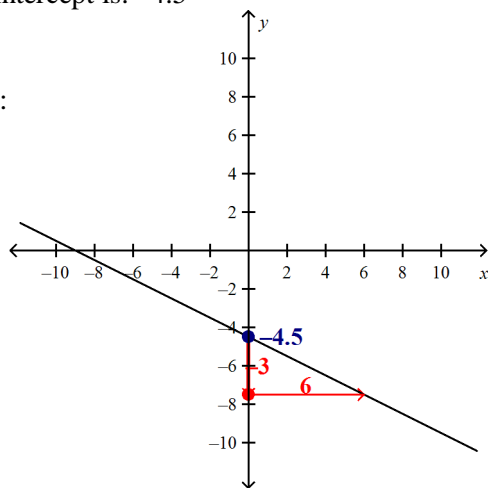


ANS: C

The slope  $m = -0.5$ .

The y-intercept is:  $-4.5$

Graph:



We pick a point not on the graph - say  $(0,0)$  and test it:  $0 < -0.5 \cdot 0 - 4.5$  ?

$$0 < -4.5 ?$$

False

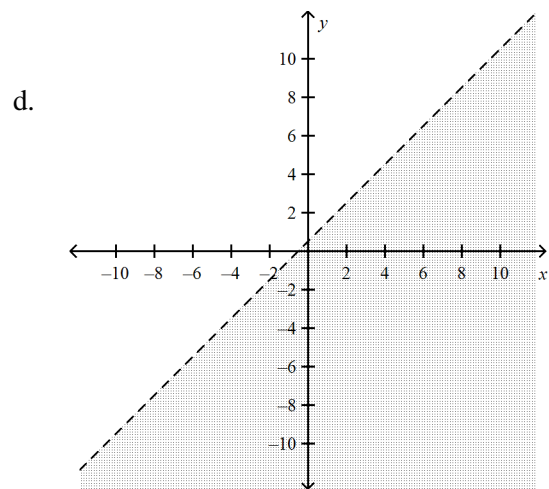
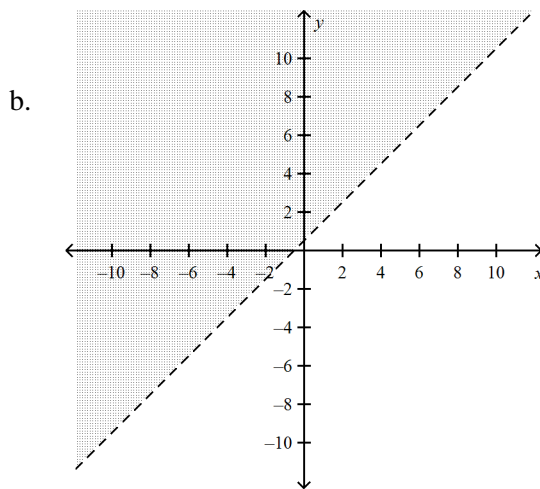
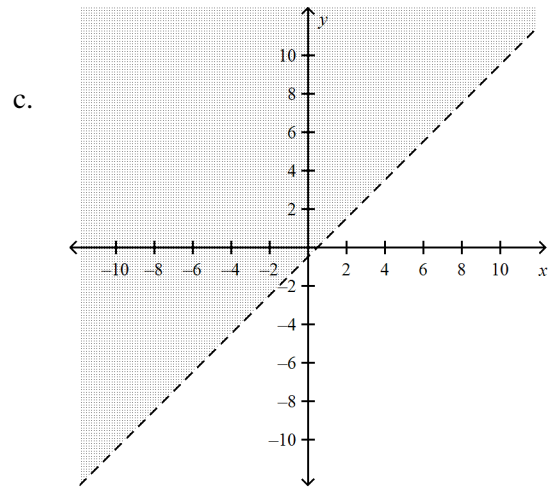
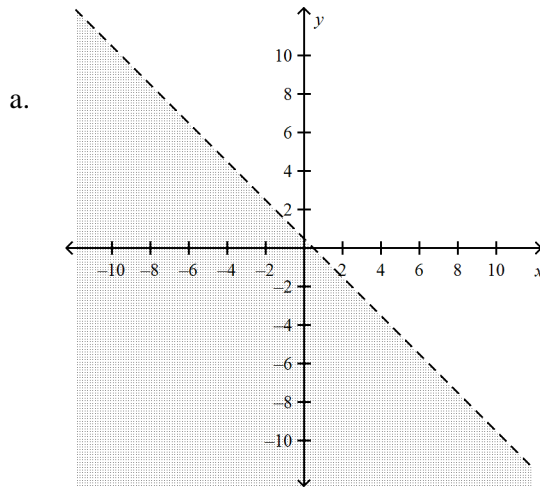
So the point  $(0,0)$  does NOT lie in the shaded region.

|   | Feedback              |
|---|-----------------------|
| A | Wrong line.           |
| B | Wrong side is shaded. |
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PTS: 3                      DIF: Grade 8                      REF: 1ALG.6.0

OBJ: Students graph a linear equation and compute the x- and y- intercepts (e.g., graph  $2x + 6y = 4$ ). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by  $2x + 6y < 4$ ).                      TOP: Algebra 1                      KEY: graph | lines |slope-intercept form | inequality

3. Which of the following is the graph of the inequality:  $-2x + 2y > 1$ ?



ANS: B

Solution: We put the equation  $-2x + 2y = 1$  into the form  $y = mx + b$ .

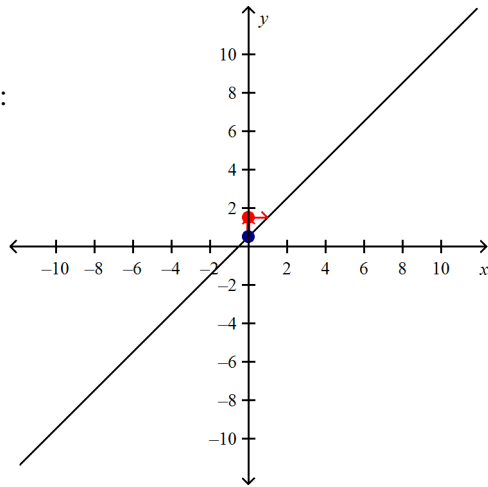
$$+ 2y = 2x + 1$$

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

$$y = x + 0.5$$

So, the slope is:  $m = 1$  and the  $y$ -intercept is  $b = 0.5$ .

Graph:



We pick a point not on the graph - say (0,0) and test it:  $(-2) \cdot 0 + 2 \cdot 0 > 1$  ?

$$0 > 1 ?$$

False

So the point (0,0) does NOT lie in the shaded region.

|   | Feedback              |
|---|-----------------------|
| A | Wrong line.           |
| B | Correct.              |
| C | Wrong line.           |
| D | Wrong side is shaded. |

PTS: 3

DIF: Grade 8

REF: 1ALG.6.0

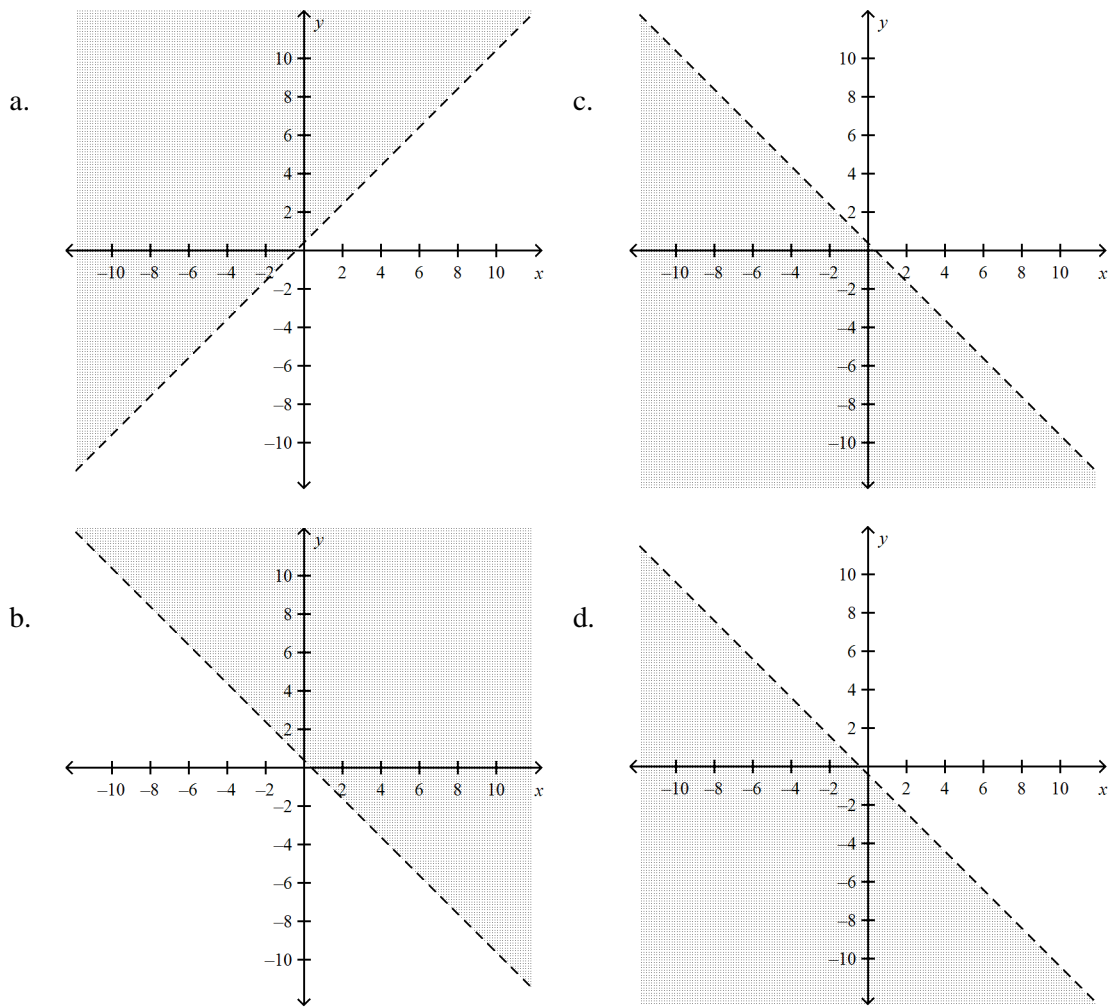
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TOP: Algebra 1

KEY: graph | lines | standard form | inequality

4. Which of the following is the graph of the inequality:  $-5x - 5y > -2$ ?



ANS: C

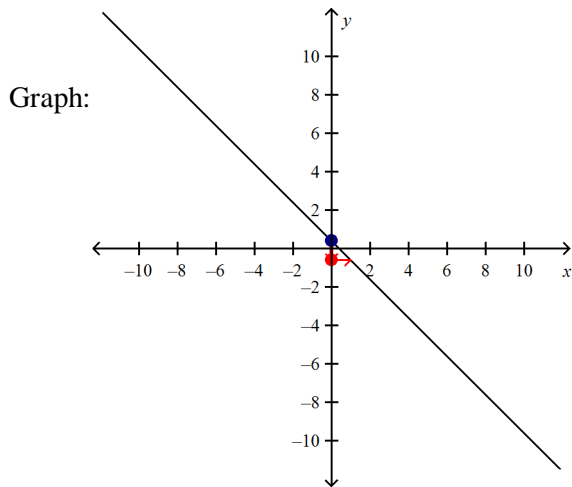
Solution: We put the equation  $-5x - 5y = -2$  into the form  $y = mx + b$ .

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

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

$$y = -x + 0.4$$

So, the slope is:  $m = -1$  and the y-intercept is  $b = 0.4$ .



We pick a point not on the graph - say  $(0,0)$  and test it:  $(-5) \cdot 0 - 5 \cdot 0 > -2$  ?  
 $0 > -2$  ?  
 True

So the point  $(0,0)$  lies in the shaded region.

|   | Feedback              |
|---|-----------------------|
| A | Wrong line.           |
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| C | Correct!              |
| D | Wrong line.           |

PTS: 3

DIF: Grade 8

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