MULTIPLE CHOICE

1. Find the equation of the line in slope-intercept form containing the two points: (1,– 3) and (–5,– 4). Leave equation in fractional form.

   a. $y = \frac{1}{6}x - \frac{17}{6}$

   b. $y = \frac{1}{4}x - \frac{13}{4}$

   c. $y = \frac{1}{6}x - \frac{19}{6}$

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

   ANS: C

   Analytic Solution:

   $$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(-4)-(-3)}{(-5)-1} = \frac{-1}{-6} = \frac{1}{6}.$$

   Equation of line: $y - y_1 = \text{m}(x - x_1)$

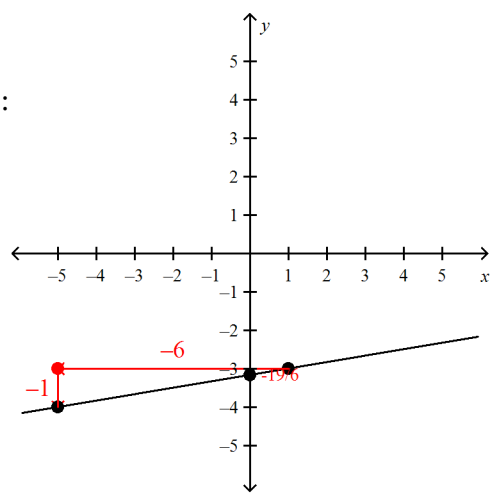
   $$y - (-3) = \frac{1}{6}(x - 1)$$

   $$y = \frac{1}{6}x + \frac{1\cdot(-1)}{6} - 3$$

   $$y = \frac{1}{6}x + \frac{1\cdot(-1) - 18}{6}$$

   $$y = \frac{1}{6}x - \frac{19}{6}$$

   Graphical check :



	Feedback
A	Wrong intercept.
B	Check your formula for finding the slope-intercept form of the equation.
C	Correct!
D	You are guessing from graphing...

PTS: 1 DIF: Grade 8 REF: 1AL2.5

OBJ: Students are able to derive linear equations by using the point-slope formula.
TOP: Algebra I KEY: lines, slope-intercept form, two-points
MSC: Dynamic NOT: Slope is always a fraction and not an integer: x2<x1, y2<y1

2. Find the equation of the line in slope-intercept form containing the two points: (–3,– 2) and (–5,– 1). Leave equation in fractional form.

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

b. $y = -\frac{1}{2}x - \frac{7}{2}$

c. $y = -\frac{1}{8}x - \frac{19}{8}$

d. $y = -\frac{1}{2}x - \frac{1}{2}$

ANS: B

Analytic Solution:

$$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(-1)-(-2)}{(-5)-(-3)} = \frac{1}{-2} = -\frac{1}{2}.$$

Equation of line: $y - y_1 = \text{m}(x - x_1)$

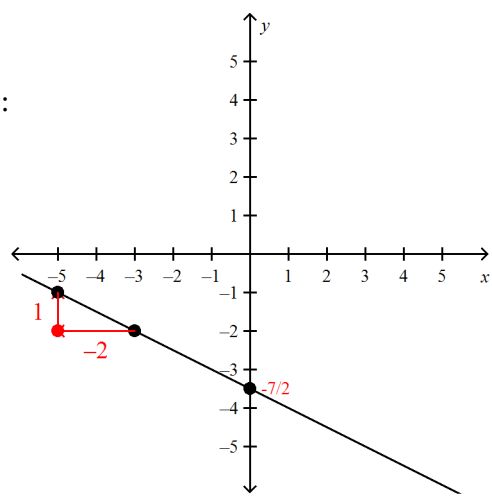
$$y - (-2) = -\frac{1}{2}(x - (-3))$$

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

$$y = -\frac{1}{2}x + \frac{-1 \cdot 3 - 4}{2}$$

$$y = -\frac{1}{2}x - \frac{7}{2}$$

Graphical check :



	Feedback
A	You are guessing from graphing...
B	Correct!
C	Check your formula for finding the slope-intercept form of the equation.
D	Wrong intercept.

PTS: 1 DIF: Grade 8 REF: 1AL2.5
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3. Find the equation of the line in slope-intercept form containing the two points: $(-1,5)$ and $(4,-3)$. Leave equation in fractional form.

a. $y = -\frac{8}{3}x + \frac{7}{3}$

b. $y = -\frac{8}{5}x + \frac{33}{5}$

c. $y = -\frac{8}{5}x + \frac{17}{5}$

d. $y = -\frac{7}{5}x + \frac{16}{5}$

ANS: C

Analytic Solution:

$$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(-3)-5}{4-(-1)} = \frac{-8}{5} = -\frac{8}{5}.$$

Equation of line: $y - y_1 = \text{m}(x - x_1)$

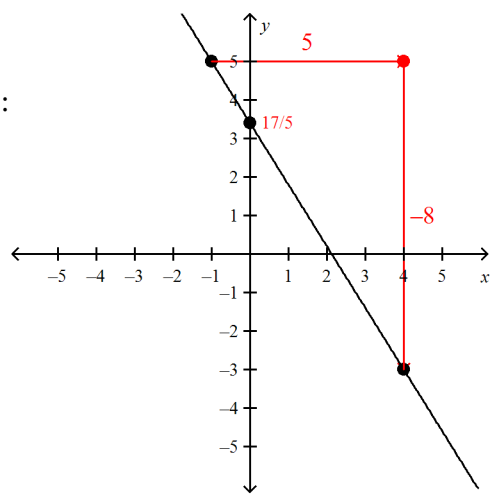
$$y - 5 = -\frac{8}{5}(x - (-1))$$

$$y = -\frac{8}{5}x + \frac{-8 \cdot 1}{5} + 5$$

$$y = -\frac{8}{5}x + \frac{-8 \cdot 1 + 25}{5}$$

$$y = -\frac{8}{5}x + \frac{17}{5}$$

Graphical check :



	Feedback
A	Check your formula for finding the slope-intercept form of the equation.
B	Wrong intercept.
C	Correct!
D	You are guessing from graphing...

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TOP: Algebra I KEY: lines, slope-intercept form, two-points

MSC: Dynamic NOT: Slope is always a fraction and not an integer: x2>x1, y2<y1

4. Find the equation of the line in slope-intercept form containing the two points: $(-1,2)$ and $(2,3)$. Leave equation in fractional form.

a. $y = \frac{1}{3}x + \frac{5}{3}$

b. $y = 1x + 3$

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

d. $y = \frac{1}{3}x + \frac{7}{3}$

ANS: D

Analytic Solution:

$$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3-2}{2-(-1)} = \frac{1}{3}.$$

Equation of line: $y - y_1 = \text{m}(x - x_1)$

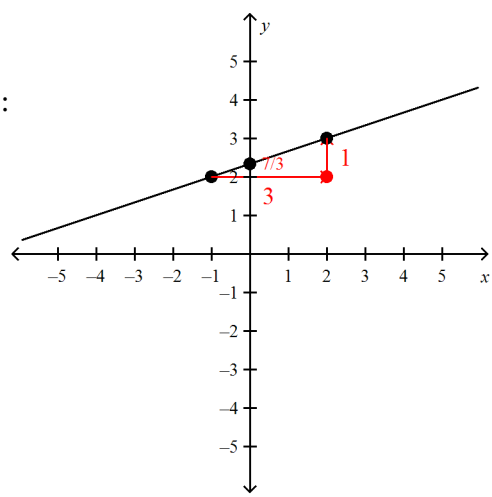
$$y - 2 = \frac{1}{3}(x - (-1))$$

$$y = \frac{1}{3}x + \frac{1 \cdot 1}{3} + 2$$

$$y = \frac{1}{3}x + \frac{1 \cdot 1 + 6}{3}$$

$$y = \frac{1}{3}x + \frac{7}{3}$$

Graphical check :



	Feedback
A	Wrong intercept.
B	Check your formula for finding the slope-intercept form of the equation.
C	You are guessing from graphing...
D	Correct!

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5. Find the equation of the line in slope-intercept form containing the two points: $(-3,-2)$ and $(1,4)$. Round approximate values to the nearest hundredth.

a. $y = 1.25\,x + 2.25$
b. $y = -3x - 11$
c. $y = 1.5\,x - 6.5$
d. $y = 1.5\,x + 2.5$

ANS: D

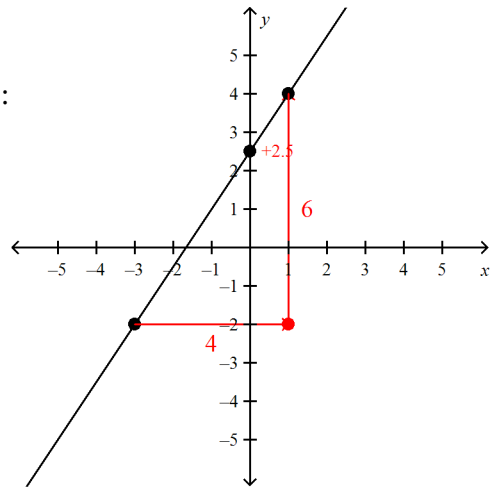
Analytic Solution:

$$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-(-2)}{1-(-3)} = \frac{6}{4} = 1.5\,.$$

Equation of line: $y - y_1 = \text{m}(x - x_1)$

$$y - (-2) = 1.5(x - (-3))$$
$$y = 1.5\,x + 1.5 \cdot 3 - 2$$
$$y = 1.5\,x + 2.5$$

Graphical check :



	Feedback
A	You are guessing from graphing...
B	Check your formula for finding the slope-intercept form of the equation.
C	Wrong intercept.
D	Correct!

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6. Find the equation of the line in slope-intercept form containing the two points: (4,5) and (–3,– 1). Round approximate values to the nearest hundredth.

a. $y = 0.86\,x + 1.57$
b. $y = 1\,x + 1.71$
c. $y = 0.86\,x + 8.43$
d. $y = -6x + 29$

ANS: A

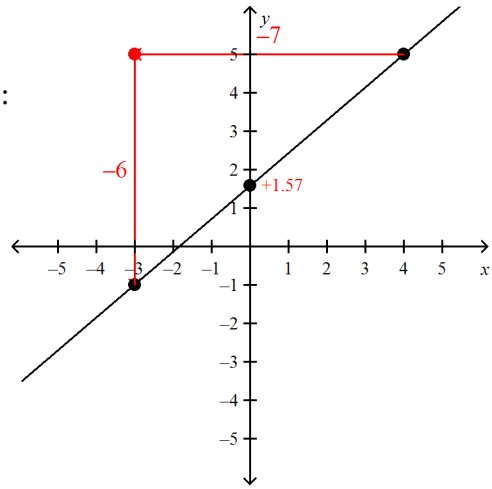
Analytic Solution:

$$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(-1) - 5}{(-3) - 4} = \frac{-6}{-7} = 0.86\,.$$

Equation of line: $y - y_1 = \text{m}(x - x_1)$

$$y - 5 = 0.86(x - 4)$$
$$y = 0.86\,x + 0.86 \cdot (-4) + 5$$
$$y = 0.86\,x + 1.57$$

Graphical check :



	Feedback
A	Correct!
B	You are guessing from graphing...
C	Wrong intercept.
D	Check your formula for finding the slope-intercept form of the equation.

PTS: 1 DIF: Grade 8 REF: 1AL2.5
OBJ: Students are able to derive linear equations by using the point-slope formula.
TOP: Algebra I KEY: lines, slope-intercept form, two-points
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7. Find the equation of the line in slope-intercept form containing the two points: (–1,– 5) and (–4,– 1). Round approximate values to the nearest hundredth.

a. $y = -1.33\,x - 6.33$
b. $y = -1.67\,x - 6$
c. $y = -0.8x - 5.8$
d. $y = -1.33\,x - 3.67$

ANS: A

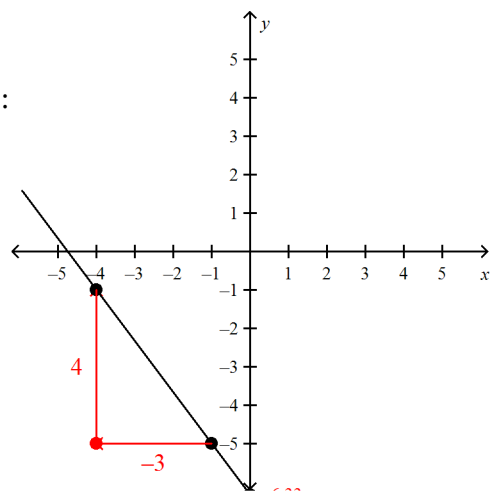
Analytic Solution:

$$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{(-1)-(-5)}{(-4)-(-1)} = \frac{4}{-3} = -1.33\ .$$

Equation of line: $y - y_1 = \text{m}(x - x_1)$

$$y - (-5) = -1.33(x - (-1))$$
$$y = -1.33\,x + -1.33 \cdot 1 - 5$$
$$y = -1.33\,x - 6.33$$

Graphical check :



	Feedback
A	Correct!
B	You are guessing from graphing...
C	Check your formula for finding the slope-intercept form of the equation.
D	Wrong intercept.

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8. Find the equation of the line in slope-intercept form containing the two points: (1,3) and (5,2). Round approximate values to the nearest hundredth.

a. $y = -0.25\,x + 3.25$
b. $y = -0.25\,x + 2.75$
c. $y = -0.2\,x + 3$
d. $y = -0.17x + 3.17$

ANS: A

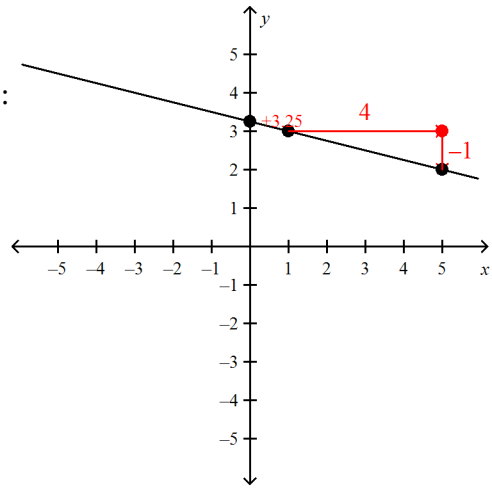
Analytic Solution:

$$\text{m} = \text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-3}{5-1} = \frac{-1}{4} = -0.25\ .$$

Equation of line: $y - y_1 = \text{m}(x - x_1)$

$$y - 3 = -0.25(x - 1)$$
$$y = -0.25\,x + -0.25 \cdot (-1) + 3$$
$$y = -0.25\,x + 3.25$$

Graphical check :



	Feedback
A	Correct!
B	Wrong intercept.
C	You are guessing from graphing...
D	Check your formula for finding the slope-intercept form of the equation.

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