MULTIPLE CHOICE

1. A line is parallel to the line for the equation: $-9y = 2x + 35$.
   What is the slope of the parallel line?

   a. $-\frac{2}{9}$ c. $-\frac{9}{2}$

   b. $\frac{2}{9}$ d. $-\frac{7}{9}$

   ANS: A

   We put $-9y = 2x + 35$ in slope-intercept form.

   To do this, we divide both sides of this equation by the coefficient of y: –9.

   $y = \frac{2}{-9}x + \frac{35}{-9}$ or $y = -\frac{2}{9}x - \frac{35}{9}$. The slope of this line is $-\frac{2}{9}$.

   Since parallel lines have the same slope, the slope of any line parallel to this line is also $-\frac{2}{9}$.

	Feedback
A	Correct!
B	Your sign is incorrect.
C	This is the reciprical value.
D	This is incorrect.

PTS: 1 DIF: Grade 8 REF: 1AL2.6
OBJ: Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point. TOP: Algebra 1
KEY: lines | slope | parallel | perpendicular MSC: Dynamic

2. A line is parallel to the line for the equation: $15 = 6y - 3x$.
What is the slope of the parallel line?

a. $\frac{1}{2}$ c. -5

b. $-\frac{1}{2}$ d. 2

ANS: A

We put $15 = 6y - 3x$ in slope-intercept form.

We have: $6y = 3x + 15$ so $y = \frac{3}{6}x + \frac{15}{6}$ or $y = \frac{1}{2}x + \frac{5}{2}$.

The slope of this line is $\frac{1}{2}$.

Since parallel lines have the same slope, the slope of any line parallel to this line is also $\frac{1}{2}$.

	Feedback
A	Correct!
B	Your sign is incorrect.
C	This is incorrect.
D	This is the reciprical value.

PTS: 2 DIF: Grade 8 REF: 1AL2.6
OBJ: Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point. TOP: Algebra 1
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3. A line is perpendicular to the line for the equation: $9y = x + 13$.
What is the slope of the perpendicular line?

a. -9

b. $\frac{1}{9}$

c. $-\frac{1}{9}$

d. 9

ANS: A

We put $9y = x + 13$ in slope-intercept form.

To do this, we divide both sides of this equation by the coefficient of y: 9.

$y = \frac{1}{9}x + \frac{13}{9}$. The slope of this line is $\frac{1}{9}$.

A line perpendicular to a line with slope a has a slope of $\frac{-1}{a}$.

So the slope of the line perpendicular to the given line is $\frac{-1}{\frac{1}{9}} = -9$.

	Feedback
A	Correct!
B	This is incorrect.
C	This is the reciprical value.
D	The sign is incorrect.

PTS: 1 DIF: Grade 8 REF: 1AL2.6
OBJ: Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point. TOP: Algebra 1
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4. A line is perpendicular to the line for the equation: $-8 = 2y + 3x$.
What is the slope of the perpendicular line?

a. $\frac{3}{2}$

b. $-\frac{2}{3}$

c. $\frac{8}{3}$

d. $\frac{2}{3}$

ANS: D

We put $-8 = 2y + 3x$ in slope-intercept form.

We have: $2y = -3x - 8$ so $y = \frac{-3}{2}x - \frac{8}{2}$ or $y = -\frac{3}{2}x - 4$.

The slope of this line is $-\frac{3}{2}$.

A line perpendicular to a line with slope a has a slope of $\frac{-1}{a}$.

So the slope of the line perpendicular to the given line is $\frac{-1}{\frac{-3}{2}} = \frac{2}{3}$.

	Feedback
A	This is the reciprical value.
B	This is not correct.
C	The sign is incorrect.
D	Correct!

PTS: 2 DIF: Grade 8 REF: 1AL2.6
OBJ: Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point. TOP: Algebra 1
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5. Find the equation of the line passing through the point (–3,–4) and parallel to the line having the equation: $1 + 3y - x = 0$.

a. $y = 3x - 3$

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

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

d. $y = 3x + 5$

ANS: B

We put $1 + 3y - x = 0$ in slope-intercept form.

We have: $-3y = -x + 1$ so $y = \frac{-1}{-3}x + \frac{1}{-3}$ or $y = \frac{1}{3}x - \frac{1}{3}$.

The slope of this line is $\frac{1}{3}$.

The equation of the line passing through the point (–3,–4) and parallel to this line is:

$y - (-4) = \frac{1}{3}(x - (-3))$

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

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

	Feedback
A	Your slope is wrong.
B	Correct!
C	Your intercept is wrong.
D	Your slope and intercept are wrong.

PTS: 2 DIF: Grade 8 REF: 1AL2.6
OBJ: Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point. TOP: Algebra 1
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6. Find the equation of the line passing through the point (4,–1) and perpendicular to the line having the equation: $12 - 4y - 8x = 0$.

a. $y = -2x - 1$

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

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

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

ANS: C

We put $12 - 4y - 8x = 0$ in slope-intercept form.

We have: $4y = -8x + 12$ so $y = \frac{-8}{4}x + \frac{12}{4}$ or $y = -2x + 3$.

The slope of this line is –2.

The equation of the line passing through the point (4,–1) and ***perpendicular*** to this line is:

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

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

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

	Feedback
A	Your slope is wrong.
B	You have the wrong slope. You have the wrong intercept.
C	Correct!
D	You forgot to reverse the sign for the slope of the perpendicular.

PTS: 2 DIF: Grade 8 REF: 1AL2.6
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