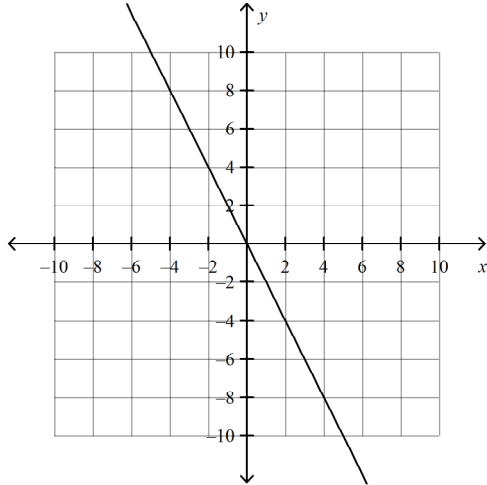


Algebra II Practice Quiz 8.1 - 8.2**Multiple Choice**

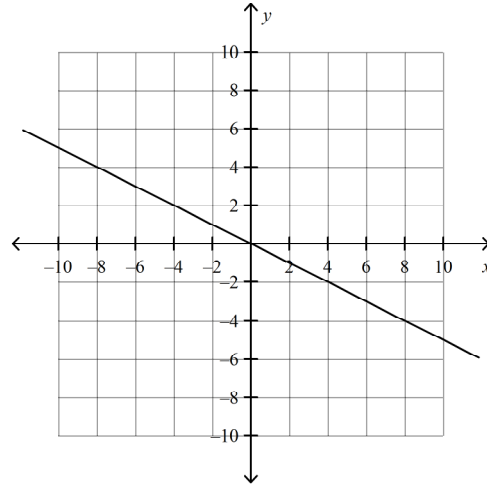
Identify the choice that best completes the statement or answers the question.

_____ 1. Given: y varies directly as x , and $y = -5$ when $x = 2.5$. Write and graph the direct variation function.

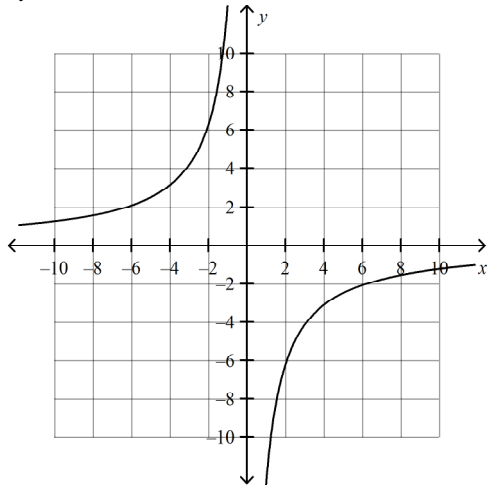
a. $y = -2x$



c. $y = -0.5x$



b. $xy = -12.5$



d. Not enough information. It takes two points to determine a line.

_____ 2. Distance varies directly as time because as time increases, the distance traveled increases proportionally. The speed of sound in air is about 335 feet per second. How long would it take for sound to travel 11,725 feet?

a. 35 sec

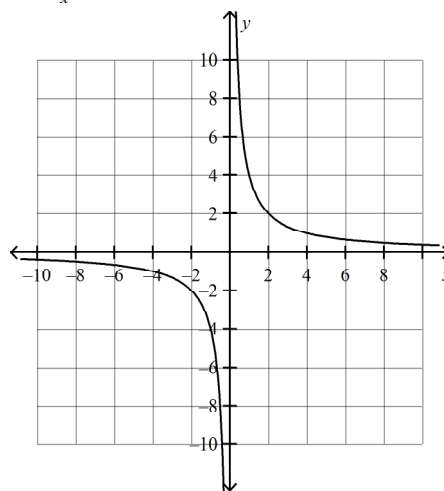
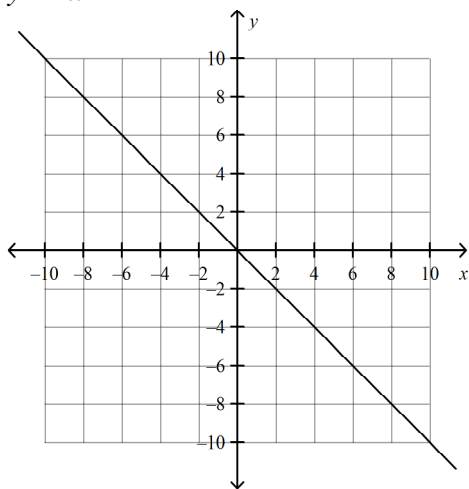
c. 30 sec

b. 45 sec

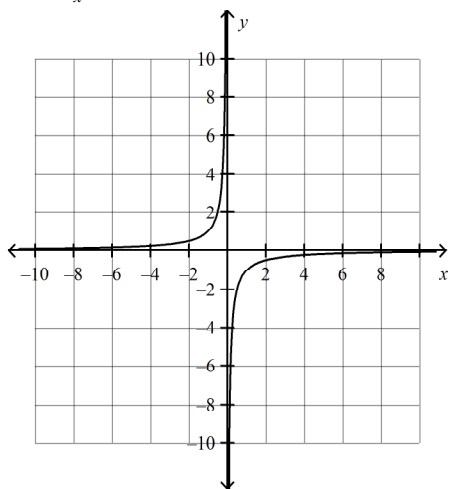
d. 40 sec

- _____ 3. The volume V of a cylinder varies jointly with the height h and the radius squared r^2 , and $V = 157.00 \text{ cm}^3$ when $h = 2 \text{ cm}$ and $r^2 = 25 \text{ cm}^2$. Find V when $h = 3 \text{ cm}$ and $r^2 = 36 \text{ cm}^2$. Round your answer to the nearest hundredth.
- a. 339.12 cm^3 c. 3.14 cm^3
 b. 157.00 cm^3 d. 39.00 cm^3

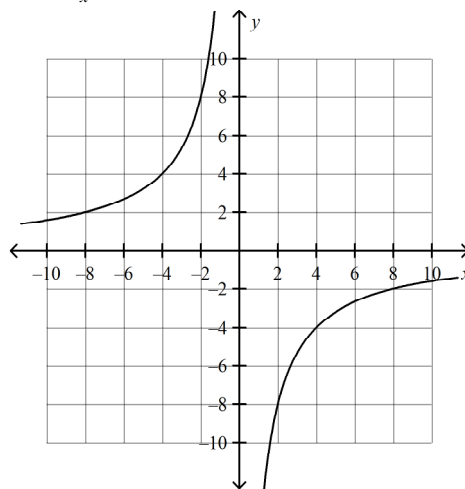
- _____ 4. Given: y varies inversely as x , and $y = 4$ when $x = -4$. Write and graph the inverse variation function.
- a. $y = -x$ c. $y = \frac{4}{x}$



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



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



_____ 9. Simplify $\frac{10-x^2-3x}{x^2+2x-8}$. Identify any x -values for which the expression is undefined.

a. $\frac{-x-5}{x+4}$

The expression is undefined at $x = -4$.

b. $\frac{-x-5}{x+4}$

The expression is undefined at $x = 2$ and $x = -4$.

c. $\frac{x+5}{x+4}$

The expression is undefined at $x = 2$ and $x = -4$.

d. $\frac{x+5}{x+4}$

The expression is undefined at $x = -4$.

_____ 10. Multiply $\frac{8x^4y^2}{3z^3} \cdot \frac{9xy^2z^6}{4y^4}$. Assume that all expressions are defined.

a. $6x^4yz^2$

c. $6x^5z^3$

b. $6x^5y^8z^9$

d. $\frac{3}{2}x^3y^2z$

_____ 11. Divide $\frac{5x^3}{3x^2y} \div \frac{25}{3y^9}$. Assume that all expressions are defined.

a. $\frac{xy^8}{5}$

c. $\frac{x}{5y^8}$

b. $\frac{125x}{9y^{10}}$

d. $\frac{5}{xy^8}$

_____ 12. Solve $\frac{x^2+x-30}{x-5} = 11$. Check your answer.

a. $x = 5$

b. $x = 16$

c. $x = -6$

d. There is no solution because the original equation is undefined at $x = 5$.

Name: _____

ID: A

- _____ 13. The area of a rectangle is equal to $x^2 + 10x + 16$ square units. If the length of the rectangle is equal to $x + 8$ units, what expression represents its width?
- | | |
|------------|---------------|
| a. $x - 2$ | c. $x + 4.00$ |
| b. $x + 2$ | d. $x + 8$ |

Algebra II Practice Quiz 8.1 - 8.2

Answer Section

MULTIPLE CHOICE

1. ANS: A

$$y = kx$$

y varies directly as x .

$$-5 = k(2.5)$$

Substitute -5 for y and 2.5 for x .

$$-2 = k$$

Solve for the constant of variation k .

$$y = -2x$$

Substitute -2 for k in the equation for direct variation.

	Feedback
A	Correct!
B	Substitute the given values of x and y in the equation for direct variation, $y = kx$. Then solve for k .
C	Substitute the given values of x and y in the equation for direct variation, $y = kx$. Then solve for k .
D	Substitute the given values of x and y in the equation for direct variation, $y = kx$. Then solve for k .

PTS: 1

DIF: Average

REF: Page 569

OBJ: 8-1.1 Writing and Graphing Direct Variation

NAT: 12.5.1.e

TOP: 8-1 Variation Functions

2. ANS: A

$$r = 335 \text{ ft per sec}$$

Find the constant of variation r .

$$d = 335t$$

Write the direct variation function.

$$11,725 = 335t$$

Substitute.

$$t = 35$$

Solve.

It would take 35 seconds for sound to travel 11,725 feet.

	Feedback
A	Correct!
B	Use the direct variation equation $d = rt$.
C	Set up a proportion and solve.
D	First, write the direct variation function. Then, substitute the given values and solve.

PTS: 1

DIF: Basic

REF: Page 570

OBJ: 8-1.2 Solving Direct Variation Problems

NAT: 12.5.4.c

TOP: 8-1 Variation Functions

3. ANS: A

$$V = khr^2$$

$$157.00 = k(2)(25)$$

$$3.14 = k$$

V varies jointly as h and r^2 .

Substitute 157.00 for V , 2 for h and 25 for r^2 .

Solve for k .

$$V = (3.14)hr^2$$

$$V = 3.14(3)(36)$$

$$V = 339.12$$

Replace k in the function.

Substitute 3 for h and 36 for r^2 .

	Feedback
A	Correct!
B	This is the area of the first cylinder, now find the area of the second cylinder.
C	This is the constant of variation. Use this value to find the volume of the new cylinder.
D	The volume is equal to a constant times the height times the square of the radius.

PTS: 1 DIF: Average REF: Page 570

OBJ: 8-1.3 Solving Joint Variation Problems

NAT: 12.5.4.c

TOP: 8-1 Variation Functions

4. ANS: D

$$y = \frac{k}{x} \quad y \text{ varies inversely as } x.$$

$$4 = \frac{k}{-4} \quad \text{Substitute the given values.}$$

$$-16 = k \quad \text{Solve for } k.$$

$$y = -\frac{16}{x} \quad \text{Write the variation function.}$$

Make a table of values to graph $y = -\frac{16}{x}$. Use both positive and negative values.

x	y
-8	2
-6	$2.\overline{6}$
-4	4
0	Undefined
4	-4
6	$-2.\overline{6}$
8	-2

	Feedback
A	Inverse variation equations are in the form $y = k/x$.
B	This equation does not have the correct constant of variation. To find k , use $xy = k$ and substitute the given x - and y -values.
C	This equation does not have the correct constant of variation. To find k , use $xy = k$ and substitute the given x - and y -values.
D	Correct!

PTS: 1 DIF: Average REF: Page 571

OBJ: 8-1.4 Writing and Graphing Inverse Variation NAT: 12.5.1.e

TOP: 8-1 Variation Functions KEY: inverse variation | relationship | graph

5. ANS: D

One method is to use $s_1 l_1 = s_2 l_2$.

$(6)(8) = (3)l_2$ Substitute given values.

$48 = 3l_2$ Simplify.

$16 = l_2$ Divide.

	Feedback
A	With inverse variation, when one quantity decreases, the other quantity increases. The number of shrubs was divided by 2, so the number of lawns should be multiplied by 2.
B	With inverse variation, when one quantity decreases, the other quantity increases. The number of shrubs was divided by 2, so the number of lawns should be multiplied by 2.
C	The number of shrubs was divided by 2, so the number of lawns should be multiplied by 2.
D	Correct!

PTS: 1

DIF: Average

REF: Page 571

OBJ: 8-1.5 Application

NAT: 12.5.1.e

TOP: 8-1 Variation Functions

6. ANS: C

In inverse variation, the product of the two quantities is constant.

x	y	xy
2	420	840
3	280	840
4	210	840

In direct variation, the ratio of the two quantities is constant.

x	y	$\frac{x}{y}$
2	420	$\frac{1}{210}$
3	280	$\frac{3}{280}$
4	210	$\frac{2}{105}$

This data set represents an inverse variation.

	Feedback
A	If the ratio of each $x - y$ pair is the same, the relationship is a direct variation.
B	If the product of each $x - y$ pair is the same, the relationship is an inverse variation.
C	Correct!

PTS: 1

DIF: Basic

REF: Page 572

OBJ: 8-1.6 Identifying Direct and Inverse Variation

NAT: 12.5.1.e

TOP: 8-1 Variation Functions

KEY: inverse variation | relationship

7. ANS: A

$$P = k \frac{T}{V}$$

Write the original equation.

$$1.6 = k \frac{280}{14}$$

Substitute and solve for k .

$$1.6 = 20k$$

$$0.08 = k$$

$$P = 0.08 \frac{250}{16}$$

Substitute for k , T , and V .

$$P = 1.25$$

	Feedback
A	Correct!
B	This would be the answer if the pressure varied inversely with the volume and temperature.
C	This is the pressure under the original conditions. Now find the new pressure with the new volume and temperature.
D	This would be the answer if the pressure varied directly with volume and temperature.

PTS: 1

DIF: Average

REF: Page 572

OBJ: 8-1.7 Application

NAT: 12.5.1.e

TOP: 8-1 Variation Functions

8. ANS: A

Factor common factors out of the numerator and/or denominator. Divide out the common factors to simplify the expression. Finally, use the original denominator to determine any y -values for which the expression is undefined.

	Feedback
A	Correct!
B	Divide out common factors.
C	Determine excluded values from the original denominator.
D	Determine excluded values from the original denominator.

PTS: 1

DIF: Average

REF: Page 577

OBJ: 8-2.1 Simplifying Rational Expressions

NAT: 12.5.3.c

TOP: 8-2 Multiplying and Dividing Rational Expressions

9. ANS: B

$$\frac{-1(x^2 + 3x - 10)}{x^2 + 2x - 8}$$

Factor -1 from the numerator and reorder the terms.

$$= \frac{-1(x+5)(x-2)}{(x+4)(x-2)}$$

Factor the numerator and denominator.

$$= \frac{-x-5}{x+4}$$

Divide the common factors and simplify.

The expression is undefined at those x -values, 2 and -4, that make the original denominator 0.

	Feedback
A	Look at the original expression to find the values that make it undefined.
B	Correct!
C	Don't forget to redistribute the -1.
D	Don't forget to redistribute the -1. Look at the original expression to find the values that make it undefined.

PTS: 1

DIF: Average

REF: Page 578

OBJ: 8-2.2 Simplifying by Factoring -1

NAT: 12.5.3.c

TOP: 8-2 Multiplying and Dividing Rational Expressions

10. ANS: C

Arrange the expressions so like terms are together: $\frac{8 \cdot 9(x^4 \cdot x)(y^2 \cdot y^2)z^6}{3 \cdot 4 \cdot z^3 y^4}$.

Multiply the numerators and denominators, remembering to add exponents when multiplying: $\frac{72x^5 y^4 z^6}{12z^3 y^4}$.

Divide, remembering to subtract exponents: $6x^5 y^0 z^3$.

Since $y^0 = 1$, this expression simplifies to $6x^5 z^3$.

	Feedback
A	A variable raised to the 0 power simplifies to 1.
B	When dividing powers with the same base, subtract the exponents.
C	Correct!
D	Multiply, then simplify.

PTS: 1

DIF: Basic

REF: Page 578

OBJ: 8-2.3 Multiplying Rational Expressions

NAT: 12.5.3.c

TOP: 8-2 Multiplying and Dividing Rational Expressions

11. ANS: A

$$\frac{5x^3}{3x^2y} \div \frac{25}{3y^9}$$

Rewrite as multiplication by the reciprocal.

$$= \frac{5x^3}{3x^2y} \cdot \frac{3y^9}{25}$$

Simplify by canceling common factors.

$$= \frac{xy^8}{5}$$

	Feedback
A	Correct!
B	To divide by a fraction, you multiply by its reciprocal.
C	To divide by a fraction, you multiply by its reciprocal.
D	Multiply the first fraction by the reciprocal of the second fraction.

PTS: 1 DIF: Basic REF: Page 579

OBJ: 8-2.4 Dividing Rational Expressions

NAT: 12.5.3.c

TOP: 8-2 Multiplying and Dividing Rational Expressions

12. ANS: D

$$\frac{x^2 + x - 30}{x - 5} = 11$$

Note that $x \neq 5$.

$$\frac{(x - 5)(x + 6)}{x - 5} = 11$$

Factor.

$$x + 6 = 11$$

The factor $(x - 5)$ cancels.

$$x = 5$$

Because the left side of the original equation is undefined when $x = 5$, there is no solution.

	Feedback
A	Is the original equation defined for this value of x ?
B	Factor the numerator and cancel common factors before solving for x . Is the original equation defined for this value of x ?
C	Factor the numerator and cancel common factors before solving for x . Is the original equation defined for this value of x ?
D	Correct!

PTS: 1 DIF: Average REF: Page 579

OBJ: 8-2.5 Solving Simple Rational Equations

NAT: 12.5.3.c

TOP: 8-2 Multiplying and Dividing Rational Expressions

13. ANS: B

$$A = lw$$

$$(x^2 + 10x + 16) = (x + 8)w$$

$$\frac{(x + 8)(x + 2)}{(x + 8)} = w$$

$$(x + 2) = w$$

Area of a rectangle equals length times width.

Substitute the area and length expressions given.

Factor and solve for w .

Simplify.

	Feedback
A	Multiply the expressions for length and width to be sure they create the polynomial expression for area.
B	Correct!
C	Factor the polynomial to find the possible length and width.
D	In a rectangle, length times width equals area.

PTS: 1 DIF: Advanced NAT: 12.5.3.c

TOP: 8-2 Multiplying and Dividing Rational Expressions