Lesson 2.2 Warm Up (Clickers)

1. Find f(3) for the following function: $f(x) = -2x^2 - 8$.

2. Give an example of an irrational number.

3. From the relation, what is domain?

{(5, 9), (-3, 7), (10, 12)}

Lesson 2.2 Direct Variation

Essential Understanding: Some quantities are in a relationship where the ratio of corresponding values is constant.

You can write a formula for a direct variation function as $y = kx$, or $y/x = k$, where k cannot be 0, x represents input values, and y represents output values. The formula $y/x = k$ says that, except for (0, 0) the ratio of all output-input pairs equals the constant k, the constant of variation.

For each function, determine whether y varies directly with x. If so, what is the constant of variation and the function rule?

A

x	y
1	2
3	6
4	8

$\frac{y}{x} = \frac{2}{1} = \frac{6}{3} = \frac{8}{4} = 2,$

so y varies directly with x.

The constant of variation is 2.
The function rule is $y = 2x$.

B

x	y
1	4
2	8
3	11

$\frac{y}{x} = \frac{4}{1} = \frac{8}{2} \neq \frac{11}{3}$

so $\frac{y}{x}$ is *not* constant.

y does *not* vary directly with x.

1 Determine whether y varies directly with x.

Yes

No

x	3	2	1
y	−21	−14	−7

2 The function below varies directly with x. What is the constant of variation and the function rule? (separate your answers with a comma)

x	3	2	1
y	−21	−14	−7

3 Determine whether the following function varies directly with x.

Yes

No

x	2	3	6
y	5	7	13

For each function, determine whether y varies directly with x. If so, what is the constant of variation?

a. 3y = 7x

b. 7y = 14x + 7

4 Determine whether y varies directly with x. If so, what is the constant of variation?

A yes; -3

B yes; -5

C yes; -5/3

D no

Ex. Suppose y varies directly with x, and y = 9 when

x = -15. What is y when x = 21?

5 Suppose y varies directly with x, and y = 15 when
x = 3. What is y when x = 12?

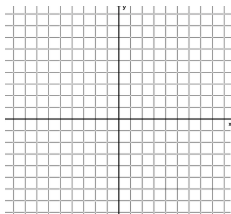Ex. A salesperson's commission varies directly with sales.
For $1000 in sales, the commission is $85. What is the
commission for $2300 in sales?

Ex. The number of calories varies directly with the mass
of cheese. If 50 grams of cheese contain 200 calories,
how many calories are in 70 grams of cheese?

The graph of a direct variation function is always a line through the origin.

Ex. What is the graph of each direct variation equation?

a. y = 3/4 x

b. y = -2x