

Direct Variation 8-9

Day 1

Name - _____

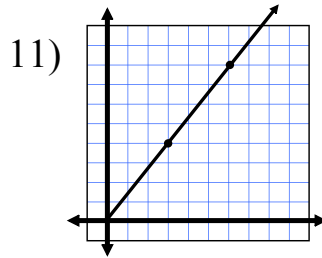
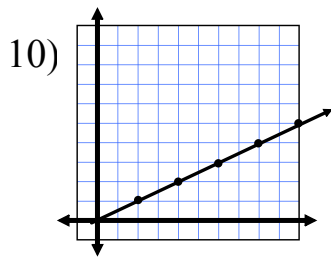
State whether each function is linear, quadratic, or a direct variation.

1) $y = 5x$ 2) $y = 3x^2 - 5$ 3) $y = \frac{1}{3}x + 2$ 4) $4y + 2 = 3x$ 5) $3x - 8y = 0$

Graph each of the following direct variations.

6) $y = 2x$ 7) $y = -\frac{3}{2}x$ 8) $y = \frac{5}{4}x$ 9) $3x - 9y = 0$

What is the constant of variation in each of the following?



12) $y = \frac{3}{5}x$

13) $7x = 15y$

Translate each of the following words into symbols. Use k for the constant of variation.

- 14) The length of the shadow a tree casts on the ground varies directly as the height of the tree.
- 15) The length a spring will stretch varies directly as the mass hanging from the spring.
- 16) The amount of potential energy in a body is directly proportional to its mass.

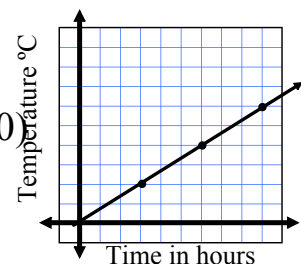
Find the constant of variation for each. Write as a fraction in lowest terms and as a decimal to the nearest thousandth.

17) y varies directly as x , and $y = 27$ when $x = 36$.

18) b is directly proportional to a , and $b = 8$ when $a = 24$.

19) m varies directly as n , and $n = -39$ when $m = 65$.

Write a direct variation equation for the following graph: 20)



Find the constant of variation for each. Then write a direct variation equation. Write the constant of variation as a fraction in lowest terms.

- 21) y varies directly as x , and $y = 350$ when $x = 70$.
- 22) j is directly proportional to p , and $p = 95$ when $j = 55$.
- 23) If a car is cruising at a constant speed, its distance travelled varies directly as the time of the trip. A 372 mile trip takes 6.2 hours.

Find the missing information.

- 24) y varies directly as x , and $y = 42$ when $x = 60$. Find y when $x = 80$.
- 25) P is directly proportional to Q , and $Q = 56$ when $P = 24$. Find Q when $P = 45$.
- 26) u varies directly as v , and $v = 112$ when $u = -44$. Find u when $v = 168$.

Use the following information to complete 27 through 29.

The distance a truck travels varies directly as the radius of its tires. A truck with 18 inch rims will travel about 12 feet per rotation.

- 27) Write an equation for the variation.
- 28) Graph the variation.
- 29) How many wheel rotations will it take a truck with 16 inch rims to drive 1 mile. (hint: 1 mile = 5280 ft.)

True/False. If false, give an example to explain your reasoning.

- 30) All linear functions are direct variations.
- 31) All direct variations are linear functions.
- 32) Some linear functions are direct variations.
- 33) No functions are both linear functions and direct variations.

Combining concepts.

- 34) The slope of a line is one-third. The line contains the point $(-6, 2)$. Write a linear function for this information. Does the function fit the model for a direct variation? Explain.