

NAME \_\_\_\_\_

DATE \_\_\_\_\_

**Module Test B Module 16**

**Solve.**

1.  $\frac{4}{r} = 12$   $r = \frac{1}{3}$  \_\_\_\_\_

2.  $\frac{x}{5} = \frac{3}{8}$   $x = \frac{15}{8}$  \_\_\_\_\_

3.  $\frac{5}{6} - \frac{t}{6} = \frac{t}{3}$   $t = \frac{5}{3}$  \_\_\_\_\_

4.  $\frac{1}{4} + \frac{2}{x} = \frac{5}{x}$   $x = 12$  \_\_\_\_\_

5.  $\frac{q+4}{q+1} - 5 = 3$   $q = -\frac{4}{7}$  \_\_\_\_\_

6.  $-3 + \frac{1}{5x} = \frac{4}{5x}$   $x = -\frac{1}{5}$  \_\_\_\_\_

7.  $\frac{3}{5} + \frac{1}{5b} = \frac{2}{b}$   $b = 3$  \_\_\_\_\_

8.  $\frac{4}{x+3} = \frac{2}{x+3} + 2$   $x = -2$  \_\_\_\_\_

**For questions 9–11, circle the letter of the correct answer.**

9. What statement describes the function shown in the table?
- a. The function shows a direct variation.
  - b. The function shows an inverse variation.
  - c. The function shows neither a direct nor an inverse variation.

x	y
0	5
1	4
2	3

10. What statement describes the function shown in the table?
- a. The function shows a direct variation.
  - b. The function shows an inverse variation.
  - c. The function shows neither a direct nor an inverse variation.

x	y
-3	-16
-2	-24
6	8

11. What statement describes the function shown in the table?
- a. The function shows a direct variation.
  - b. The function shows an inverse variation.
  - c. The function shows neither a direct nor an inverse variation.

x	y
-4	-12
$\frac{1}{3}$	1
7	21

**True or False.**

12. The resistance  $R$  measured in Ohms, of a copper wire varies directly as its length  $l$ .
- a. If 30 feet of wire provides 300 Ohms of resistance, then 40 feet of the wire will provide 400 Ohms of resistance.
  - b. If 500 Ohms of resistance are created by 4 feet of wire, then 250 Ohms of resistance are created by 8 feet of wire.

true \_\_\_\_\_

false \_\_\_\_\_

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13. In order for a seesaw to be balanced, the distance  $d$  a person sits from the fulcrum (pivot) varies inversely as the person's weight.
- a. If Julio weighs 120 pounds and sits 5 feet from the fulcrum, then, Diego must weigh 96 pounds if the seesaw is balanced when he sits four feet from the fulcrum?
- b. If Phil weighs 180 pounds and sits 3.5 feet from the fulcrum, then, Sam must sit 4.2 feet from the fulcrum if his weight is 150 pounds?

**false****true****Solve.**

14. The ordered pair  $(-2, 10)$  appears in a function in which  $y$  varies directly as  $x$ .

Write the direct variation function.  $\frac{y}{x} = -5$ 

15. The variable  $y$  varies inversely as  $x$ :  $y$  is 5 when  $x$  is  $-8$ . Find  $x$  when  $y$  is 2.

$x = -20$

16. The variable  $y$  varies directly as  $x$ :  $y$  is 2 when  $x$  is 12. Find  $y$  when  $x$  is 2.

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

17. It will take Khallad 10 hours to build a fence for the Petersons. Ron can build the same fence in 15 hours. If Khallad and Ron work together, how long will it take them to build the fence?

- a. Organize the given information into a chart.

	Work Rate	Time Worked	Work Done
Khallad	$\frac{1}{10}$	$t$	$\frac{t}{10}$
Ron	$\frac{1}{15}$	$t$	$\frac{t}{15}$

- b. Write an equation that can be used to solve the problem.

$\frac{t}{10} + \frac{t}{15} = 1$

- c. Solve the equation.

$$\begin{aligned} \frac{t}{10} + \frac{t}{15} &= 1 \\ 30 \cdot \frac{t}{10} + 30 \cdot \frac{t}{15} &= 30 \cdot 1 \\ 3t + 2t &= 30 \\ 5t &= 30 \\ t &= 6 \end{aligned}$$

**Together, Khallad and Ron can build the fence in 6 hours.**

18. Kelly drove 100 miles to visit her brother. She drove at a constant rate and then, made the return trip at twice the speed. The entire trip took 6 hours. What was Kelly's rate of speed *going* to visit her brother? Show all work.

$$\begin{aligned}\frac{100}{r} + \frac{100}{2r} &= 6 \\ 2r \cdot \frac{100}{r} + 2r \cdot \frac{100}{2r} &= 2r \cdot 6 \\ 200 + 100 &= 12r \\ 300 &= 12r \\ 25 &= r\end{aligned}$$

**Kelly's rate of speed going to visit her brother was 25 miles per hour.**

19. Kyle solved the equation  $\frac{x}{x-3} = 5 + \frac{x}{x-3}$  and found an answer of  $x = 3$ . Explain why 3 can not be a solution to the equation.

**Three is a restricted value. When the equation using  $x = 3$  is checked, the denominators of each fraction in the equation are 0. A fraction with 0 in the denominator is undefined.**

20. The circumference of a circle  $C$  can be approximated using the equation  $C = (3.14)d$ , where  $d$  is the circle's diameter. Does the function described by  $d$  and  $C$  show a direct variation or an inverse variation? Explain.

**The function shows a direct variation. For each ordered pair  $(d, C)$ , the ratio of  $C$  to  $d$  is 3.14.**

