

## Midterm Exam Algebra 1b Review Packet

### Multiple Choice

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

- \_\_\_\_\_ 1. During the month of February, Fabulous Feet Shoe Mart sold 45 pairs of red loafers. After an ad campaign to boost sales, they sold 54 pairs in March. Find the percent of increase in sales.  
 a. 23%                      b. 12%                      c. 20%                      d. 15%
- \_\_\_\_\_ 2. Evaluate  $u + xy$ , for  $u = 12$ ,  $x = 5$ , and  $y = 10$ .  
 a. 70                          b. 27                          c. 62                          d. 170

**Simplify the expression.**

- \_\_\_\_\_ 3.  $5(2 + 16) \div (8 - 6)$   
 a. 5                          b. 45                          c. 6                          d. 18
- \_\_\_\_\_ 4.  $\frac{1}{2}(-4m + 18)$   
 a.  $-2m + 18$                       c.  $-2m + 72$   
 b.  $-16m + 9$                       d.  $-2m + 9$
- \_\_\_\_\_ 5.  $-6.4(-7.9)$   
 a.  $-50.56$                       b.  $-7.68$                       c.  $-9.48$                       d. 50.56
- \_\_\_\_\_ 6.  $4[(11 - 5)^2 \div 4]$   
 a. 9                          b. 12                          c. 6                          d. 36
- \_\_\_\_\_ 7.  $-10 + 9$   
 a. 19                          b.  $-1$                           c. 1                          d.  $-19$

**Solve the equation.**

- \_\_\_\_\_ 8.  $4.4x + 3.5 = 16.7$   
 a. 4.6                          b. 4                          c. 1.9                          d. 3
- \_\_\_\_\_ 9.  $6 = -d + 18$   
 a.  $-1$                           b. 12                          c. 15                          d.  $-12$
- \_\_\_\_\_ 10.  $\frac{2}{3}x - 3 = 8$   
 a.  $-16\frac{1}{2}$                       b.  $16\frac{1}{2}$                       c. 19                          d.  $7\frac{1}{3}$
- \_\_\_\_\_ 11.  $15 = -d + 9$   
 a. 6                          b.  $-8$                           c.  $-6$                           d. 9
- \_\_\_\_\_ 12.  $37 + 8 + 3m = 78$   
 a.  $-11$                           b. 11                          c. 14                          d. 10

13.  $\frac{2p}{3} - 24 = -34$   
 a.  $-87$                       b.  $-15$                       c.  $-10$                       d.  $-26$

Do the data in the table represent a direct variation or an inverse variation? Write an equation to model the data in the table.

14.

$x$	2	4	8	12
$y$	2	1	$\frac{1}{2}$	$\frac{1}{3}$

- a. direct variation;  $y = 4x$                       c. inverse variation;  $xy = 4$   
 b. direct variation;  $y = \frac{4}{x}$                       d. inverse variation;  $\frac{y}{x} = 4$

Write an algebraic expression for the phrase.

15.  $-3$  times the quantity  $w$  minus 7  
 a.  $w(-3 - 7)$                       b.  $-3(w - 7)$                       c.  $\frac{-3}{w-7}$                       d.  $-3w - 7$
16. the product of  $n$  and 11  
 a.  $\frac{n}{11}$                       b.  $n - 11$                       c.  $n + 11$                       d.  $11n$
17. A zucchini plant in Darnell's garden was 10 centimeters tall when it was first planted. Since then, it has grown approximately 0.5 centimeter per day.  
 a. Write a rule to describe the function.  
 b. After how many days will the zucchini plant be 0.19 meter tall?  
 a.  $h(d) = \frac{d}{0.5} + 10$ ; 5 days                      c.  $h(d) = 0.5d$ ; 38 days  
 b.  $h(d) = 10d + 0.5$ ; 1 days                      d.  $h(d) = 0.5d + 10$ ; 18 days
18. The total cost to rent a row boat is \$14 times the number of hours the boat is used. Write an equation to model this situation if  $c$  = total cost and  $h$  = number of hours.  
 a.  $h = 14c$                       b.  $c = 14h$                       c.  $c - 14 = h$                       d.  $c = \frac{h}{14}$

Find the constant of variation  $k$  for the direct variation.

19.  $5x + 2y = 0$   
 a.  $k = 2$                       b.  $k = \frac{2}{5}$                       c.  $k = -\frac{5}{2}$                       d.  $k = \frac{5}{2}$

20.

$x$	$f(x)$
-2	-6
-1	-3
2	6
4	12

- a.  $k = -3$                       b.  $k = 3.5$                       c.  $k = 0.3$                       d.  $k = 3$

**Find the slope of the line that passes through the pair of points.**

21. (5, 5), (6, 3)

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

22. You can use the formula  $C = \frac{5}{9}(F - 32)$  to convert temperature in degrees Fahrenheit,  $F$ , to temperature in degrees Celsius,  $C$ . What is  $72^\circ\text{F}$  in degrees Celsius? Round your answer to the nearest tenth.

- a.  $22.2^\circ\text{C}$                       b.  $8^\circ\text{C}$                       c.  $57.8^\circ\text{C}$                       d.  $40^\circ\text{C}$

**Solve.**

23.  $7d + d - d + 2 = 5d$

- a.  $\frac{1}{2}$                       b.  $-1$                       c.  $-\frac{1}{6}$                       d.  $-7$

**Find the  $x$ - and  $y$ -intercept of the line.**

24.  $3x + 5y = 105$

- a.  $x$ -intercept is 5;  $y$ -intercept is 3.                      c.  $x$ -intercept is 35;  $y$ -intercept is 21.  
b.  $x$ -intercept is 3;  $y$ -intercept is 5.                      d.  $x$ -intercept is 21;  $y$ -intercept is 35.

**Write an equation of a line with the given slope and  $y$ -intercept.**

25.  $m = 2, b = -4$

- a.  $y = -4x + 2$                       c.  $y = -2x - 4$   
b.  $y = 2x - 4$                       d.  $y = 2x + 4$

26. Find the mean and range.

18 29 21 18 20 23 37 36

- a. mean = 25.25; range = 22                      c. mean = 22.85; range = 21  
b. mean = 26.85; range = 19                      d. mean = 25.25; range = 19

Solve each percent problem. Round to the nearest hundredth where necessary.

- \_\_\_ 27. 13 is what percent of 25?
- |          |         |
|----------|---------|
| a. 44.2% | c. 52%  |
| b. 57.2% | d. 1.9% |

- \_\_\_ 28. What is 50% of 51?
- |         |          |
|---------|----------|
| a. 2.08 | c. 2,550 |
| b. 102  | d. 25.5  |

Solve the proportion.

- \_\_\_ 29.  $\frac{9}{5} = \frac{-10}{x}$
- |         |        |         |        |
|---------|--------|---------|--------|
| a. -4.5 | b. -18 | c. -5.6 | d. -50 |
|---------|--------|---------|--------|

- \_\_\_ 30. The grocery store sells kumquats for \$4.50 a pound and Asian pears for \$2.50 a pound. Write an equation in standard form for the weights of kumquats  $k$  and Asian pears  $p$  that a customer could buy with \$12.
- |                       |                       |
|-----------------------|-----------------------|
| a. $4.5k = 2.5p + 12$ | c. $4.5p + 2.5k = 12$ |
| b. $4.5 + 2.5 = k$    | d. $4.5k + 2.5p = 12$ |

- \_\_\_ 31. Evaluate  $-x + 8.3$  for  $x = 4.8$ .
- |        |          |         |         |
|--------|----------|---------|---------|
| a. 3.5 | b. -13.1 | c. -3.5 | d. 13.1 |
|--------|----------|---------|---------|

Define a variable and write an expression for the phrase.

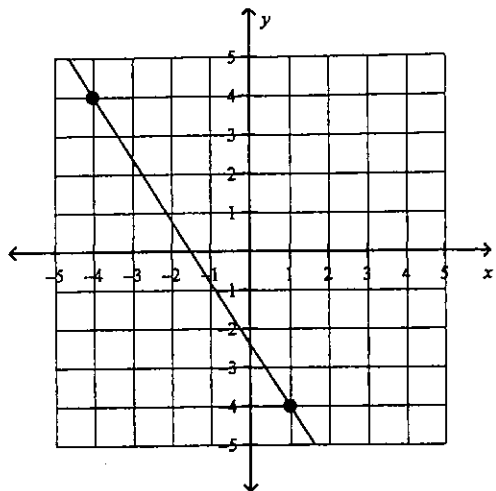
- \_\_\_ 32. 3 minus a number
- |                  |                  |         |            |
|------------------|------------------|---------|------------|
| a. $\frac{n}{3}$ | b. $\frac{3}{n}$ | c. $3n$ | d. $3 - n$ |
|------------------|------------------|---------|------------|

- \_\_\_ 33. A taxi company charges passengers \$1.00 for a ride, no matter how long the ride is, and an additional \$0.25 for each mile traveled. The rule  $c = 0.25m + 1.00$  describes the relationship between the number of miles  $m$  and the total cost of the ride  $c$ .
- |  |                   |                   |                   |
|--|-------------------|-------------------|-------------------|
| a. What is the charge for a 1-mile ride?   |                   |                   |                   |
| b. What is the charge for a 2.7-mile ride? |                   |                   |                   |
| a. \$1.00; \$1.25                          | b. \$0.25; \$0.68 | c. \$0.25; \$2.95 | d. \$1.25; \$1.68 |

- \_\_\_ 34. Write an equation of the direct variation that includes the point  $(-8, 13)$ .
- |                         |                        |                         |                        |
|-------------------------|------------------------|-------------------------|------------------------|
| a. $y = -1\frac{5}{8}x$ | b. $y = 1\frac{5}{8}x$ | c. $y = -\frac{8}{13}x$ | d. $y = \frac{1}{13}x$ |
|-------------------------|------------------------|-------------------------|------------------------|

Write the slope-intercept form of the equation for the line.

35.



a.  $y = -\frac{12}{5}x + \frac{8}{5}$

c.  $y = -\frac{5}{8}x + \frac{12}{5}$

b.  $y = \frac{8}{5}x - \frac{12}{5}$

d.  $y = -\frac{8}{5}x - \frac{12}{5}$

Write an equation in point-slope form for the line through the given point with the given slope.

36.  $(-8, -1); m = -\frac{2}{3}$

a.  $y - 1 = -\frac{2}{3}(x - 8)$

c.  $y - 1 = -\frac{2}{3}(x + 8)$

b.  $y + 1 = -\frac{2}{3}(x + 8)$

d.  $y + 8 = -\frac{2}{3}(x + 1)$

Write a function rule for the table.

37.

$x$	$f(x)$
0	0
1	-1
2	-2
3	-3

a.  $f(x) = -x$

b.  $f(x) = x + 1$

c.  $f(x) = x$

d.  $f(x) = x - 1$

38. Write  $-\frac{8}{13}, \frac{3}{10}, -\frac{5}{6}$  in order from least to greatest.

a.  $-\frac{8}{13}, \frac{3}{10}, -\frac{5}{6}$

b.  $-\frac{8}{13}, -\frac{5}{6}, \frac{3}{10}$

c.  $\frac{3}{10}, -\frac{5}{6}, -\frac{8}{13}$

d.  $-\frac{5}{6}, -\frac{8}{13}, \frac{3}{10}$

Name the property the equation illustrates.

39.  $2\left(-\frac{7}{6}\right) = \left(-\frac{7}{6}\right)2$

- a. Commutative Property of Addition
- b. Commutative Property of Multiplication
- c. Associative Property of Addition
- d. Inverse Property of Multiplication

**Short Answer**

40. Find  $f(-2)$  for  $f(x) = 4x - 1$ .

- a. 1
- b. -1
- c. 9
- d. -9

41. Find  $f(6)$  for  $f(x) = 4x - 4$ .

- a. 5
- b. -5
- c. 20
- d. -20