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Chapter 8:

Functions

Relation and Functions

Determine whether each relation is a function. Then state the domain and range of each relation.

1)

Function:

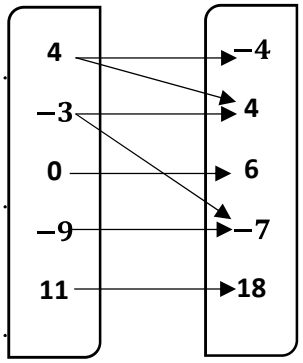
……

Domain:

……

Range:

……



2)

Function:

……

Domain:

……

Range:

……

x	y
1	3
4	0
−9	−2
1	−2
−10	5

3)

Function:

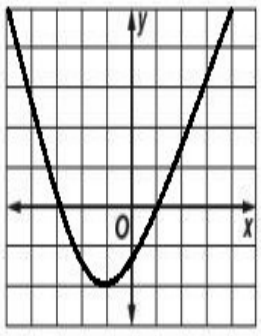
……

Domain:

……

Range:

……



4) $\{(1,-1),(6,0),(0,8),(4,3),(2,5)\}$

Function:

……

Domain:

……

Range:

……

5)

Function:

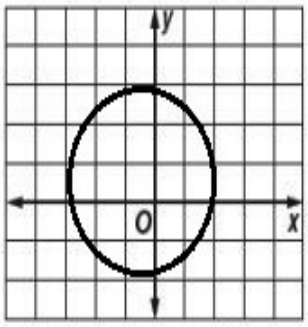
……

Domain:

……

Range:

……



6)

Function:

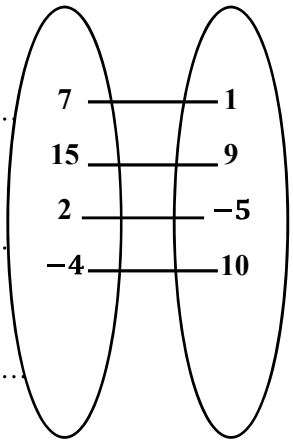
……

Domain:

……

Range:

……



Slope form

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

1) $5x + 3y = 15$

2) $4x + 12y = 3$

3) $7x + y = -9$

4) $-3x + 8y = 5$

5) $3x - 2y = 9$

6) $-14x + 2y = 4$

7) $5x + y = 2$

8) $7x - 5y = -3$

9) $-0.3x + 5y = 25$

10) $-6x + \frac{1}{2}y = 10$

11) $12x + y = 0$

12) $9x = -45y - 10$

13) $3.5x = 7y + 7$

14) $8x = -\frac{2}{5}y + 10$

Slope and Y-Intercept

Find the slope and y-intercept of each equation.

1) $y = \frac{1}{4}x + 3$

2) $y = 9x + 5$

3) $x - 7y = 21$

4) $y = 3x + 20$

5) $y = 7$

6) $y = -8x + 5$

7) $x = -16$

8) $y = 2x$

9) $y - 6 = 7(x + 1)$

10) $x = -\frac{12}{5}y - 12$

Slope and One Point

Find a Point-Slope equation for a line containing the given point and having the given slope.

1) $m = -3, (0, 1)$

2) $m = 2, (2,1)$

3) $m = -1, (-1, -1)$

4) $m = 4, (2,2)$

5) $m = 3, (1,5)$

6) $m = \frac{1}{2}, (4,2)$

7) $m = 1, (-1, -4)$

8) $m = 0, (4, -7)$

9) $m = 5, (1, 0)$

10) $m = \frac{1}{7}, (-3, -2)$

11) $m = -2, (4, -1)$

12) $m = -3, (1, -3)$

13) $m = 4, (0, 2)$

14) $m =$ undefined, $(7, -7)$

15) $m = -\frac{1}{4}, (4, 2)$

16) $m = \frac{1}{5}, (2, 4)$

17) $m = -5, (1, 3)$

18) $m = 3, (-1, -2)$

19) $m = \frac{1}{7}, (7, 1)$

20) $m = \frac{-2}{3}, (1, -1)$

21) $m = \frac{1}{3}, (3, 3)$

22) $m = -6, (0, -2)$

23) $m = 1, (1, -5)$

24) $m = -\frac{3}{4}, (4, -4)$

25) $m = 0, (-1, 15)$

26) $m =$ Undefined, $(-5, -6)$

Slope of Two Points

Write the slope-intercept form of the equation of the line through the given points.

1) $(3, 0), (-3, 6)$

2) $(4, 1), (-4, 5)$

3) $(5, 2), (-2, 9)$

4) $(1,10), (-1, 12)$

5) $(5, 15), (-7, 9)$

6) $(2,14), (-8,4)$

7) $(3, 2), (-4, 16)$

8) $(4, 7), (-8, 10)$

9) $(3,5), (4,6)$

10) $(6, 2), (5, 2)$

11) $(1, 2), (2, 4)$

12) $(2, 5), (-4,7)$

13) $(1,1), (-2, 13)$

14) $(7,7), (-5, 10)$

15) $(6, 5), (-2,13)$

16) $(3, 6), (8, 11)$

17) $(9, 0), (5, 2)$

18) $(1, 8), (-2, 9)$

19) $(4, -2), (-11, 8)$

20) $(3, -4), (-7, 1)$

21) $(5, 1), (-11, 5)$

22) $(3, -7), (7, 9)$

23) $(4, -6), (12,2)$

24) $(9, 5), (8, 4)$

Equation of Parallel and Perpendicular lines

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

1) Through: $(-2, 6)$, parallel to $y = 3x + 15$

2) Through: $(-1, -8)$, parallel to $y = -5x$

3) Through: $(-5, 5)$, perpendecular to $y = \frac{1}{3}x + 4$

4) Through: $(4, 2)$, parallel to $y = -7x + 10$

5) Through: $(-10, -1)$, parallel to $y = \frac{2}{5}x - 9$

6) Through: $(3,2)$, perpendecular to $y = -\frac{1}{4}x + 8$

7) Through: $(3, -4)$, perpendecular to $y = -3x - 7$

8) Through: $(-2, 4)$, perpendecular to $y = -\frac{1}{9}x + 6$

9) Through: $(0, -5)$, parallel to $3y + 6x = 7$

10) Through: $(1, 1)$, parallel to $y = \frac{1}{8}x - 3$

11) Through: $(2, -2)$, parallel to $y = 3$

12) Through: $(5,1)$, perpendecular to $y = \frac{4}{3}x + 1$

13) Through: $(-1, 8)$, perpendecular to $4y - x = 16$

14) Through: $(5, 7)$, parallel to $5y + x = 2\frac{1}{4}$

15) Through: $(2, 1)$, perpendecular to $y = 3x + 12$

16) Through: $(-4, 2)$, parallel to $8y - x = 10$

17) Through: $(0, -2)$, perpendecular to $y = -x + \frac{1}{4}$

18) Through: $(-3, -3)$, perpendecular to $7y - 3x - 4 = 0$

Answers of Worksheets

Relation and Functions

1) No, $D_f = \{4, -3, 0, -9, 11\}$, $R_f = \{-4, 4, 6, -7, 18\}$
2) No, $D_f = \{1, 4, -9, -10\}$, $R_f = \{3, 0, -2, 5\}$
3) Yes, $D_f = (-\infty, \infty)$, $R_f = \{-2, \infty)$
4) Yes, $D_f = \{1{,}6, 0{,}4, 2\}$, $R_f = \{-1, 0, 8, 3, 5\}$
5) No, $D_f = [-3, 2]$, $R_f = [-2, 3]$
6) Yes, $D_f = \{7, 15, 2, -4\}$, $R_f = \{1, 9, -5, 10\}$

Slope form

1) $y = -\frac{5}{3}x + 5$
2) $y = -\frac{1}{3}x + \frac{1}{4}$
3) $y = -7x - 9$
4) $y = \frac{3}{8}x + \frac{5}{8}$
5) $y = \frac{3}{2}x - \frac{9}{2}$
6) $y = 7x + 2$
7) $y = -5x + 2$
8) $y = \frac{7}{5}x + \frac{3}{5}$
9) $y = 0.06x + 5$
10) $y = 12x + 20$
11) $y = -12x$
12) $y = -\frac{1}{5}x - \frac{2}{9}$
13) $y = 0.5x - 1$
14) $y = -20x + 25$

Slope and Y-Intercept

1) $m = \frac{1}{4}, b = 3$
2) $m = 9, b = 5$
3) $m = \frac{1}{7}, b = -3$
4) $m = 3, b = 20$
5) $m = 0, b = 7$
6) $m = -8, b = 5$
7) $m = undefind,$ $b: no\ intercept$
8) $m = 2, b = 0$
9) $m = 7, b = 13$
10) $m = -\frac{5}{12}, b = -5$

Slope and One Point

1) $y = -3x + 1$
2) $y = 2x - 3$
3) $y = -x - 2$
4) $y = 4x - 6$
5) $y = 3x + 2$
6) $y = \frac{1}{2}x$
7) $y = x - 3$
8) $y = -7$
9) $y = 5x - 5$
10) $y = \frac{1}{7}x - \frac{11}{7}$
11) $y = -2x + 7$
12) $y = -3x$
13) $y = 4x + 2$
14) $x = 7$
15) $y = -\frac{1}{4}x + 3$
16) $y = \frac{1}{5}x + \frac{18}{5}$
17) $y = -5x + 8$
18) $y = 3x + 1$
19) $y = \frac{1}{7}x$
20) $y = -\frac{2}{3}x - \frac{1}{3}$
21) $y = \frac{1}{3}x + 2$

State of Texas Assessments of Academic Readiness

STAAR Practice Test 1

Mathematics

GRADE 8

Administered *Month Year*

1) Which equation can be equal "10 more than the ratio of a number to 4 is equal to 7 less than the number"?

A. $10x - 4 = 7 - x$

B. $10 + \frac{x}{4} = x - 7$

C. $\frac{10}{7}x - 4 = 4x$

D. $10 + 4x = 7 - x$

2) Arrange the following fractions in order from least to greatest.

$$\frac{3}{8}, \frac{4}{7}, \frac{1}{5}, \frac{23}{25}, \frac{14}{19}$$

A. $\frac{1}{5}, \frac{3}{8}, \frac{4}{7}, \frac{14}{19}, \frac{23}{25}$

B. $\frac{3}{8}, \frac{4}{7}, \frac{1}{5}, \frac{14}{19}, \frac{23}{25}$

C. $\frac{23}{25}, \frac{14}{19}, \frac{3}{8}, \frac{4}{7}, \frac{1}{5}$

D. $\frac{14}{19}, \frac{23}{25}, \frac{1}{5}, \frac{4}{7}, \frac{3}{8}$

3) Elena earns $7.00an hour and worked 33 hours. Her brother earns $8.25 an hour. How many hours would her brother need to work to equal Elena's earnings over 36 hours?

A. 22.25

B. 28

C. 40

D. 30.5

4) In a library, 30% of the books are fiction and the rest are non-fiction. Given that there are 1,200 more non-fiction books than fiction books, what is the total number of books in the library?

A. 2,000

B. 2,800

C. 3,000

D. 3,500

STAAR Practice Test 2

Answers and Explanations

1) Answer: C

The smallest prime number is 2, and the largest even negative integer is −2.

2+5 (−2) = 2−10 = −8.

2) Answer: D

State the problem in a mathematical sentence:

$a + 29 = 244 - 4a$

$a + 4a = 244 - 29$

$5a = 215 \rightarrow a = 43$

3) Answer: A

$8\frac{7}{24} - 6\frac{2}{3} + 2\frac{5}{6} = (8 - 6 + 2)\frac{7}{24} - \frac{16}{24} + \frac{20}{24} = 4(\frac{-9}{24} + \frac{20}{24}) = 4(\frac{20-9}{24}) = 4\frac{11}{24}$

4) Answer: A

Use the formula for Percent of Change:

$\frac{\text{New Value} - \text{Old Value}}{Old\ Value} \times 100\ \% = \frac{32.10-30}{30} \times 100\% = \frac{2.10}{30} \times 100\% = 7\%$

5) Answer: A

$|2x - 3| = 7 \rightarrow \begin{cases} 2x - 3 = 7 \rightarrow 2x = 10 \rightarrow x = 5 \\ 2x - 3 = -7 \rightarrow 2x = -4 \rightarrow x = -2 \end{cases}$

6) Answer: C

Multiply equation (2) by 5. Add two equations [(1) +5(2)]:

$\begin{cases} 2x - 5y = 16 \\ 10x + 5y = 20 \end{cases} \rightarrow 12x = 36 \rightarrow x = 3$

Substitute $x = 3$ into equation (1): $2(3) - 5y = 16 \rightarrow -5y = 10 \rightarrow y = -2$

7) Answer: C

$V = l \times w \times h = 19 \times 15 \times 8 = 2{,}280\ in^3$

8) Answer: D

$\sqrt[4]{5^{-8}} = \sqrt[4]{\frac{1}{5^8}} = \frac{\sqrt[4]{1}}{\sqrt[4]{5^8}} = \frac{1}{5^{(\frac{8}{4})}} = \frac{1}{5^2} = 5^{-2} = \frac{1}{25}$

9) Answer: A

There are no values of the variable that make the equation true.