

2 Mid-Chapter Quiz

1. $x|y$ Not a function.

| | |
|---|---|
| 3 | 7 |
| 4 | 2 |
| 3 | 2 |
| 5 | 1 |

 The input 3 has 2 outputs, 7 and 2.

2. $x|y$ Function

| | |
|---|---|
| 1 | 1 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |

 Each input has exactly one output.

3. $x - 3y = 9$

| | |
|---|---|
| $x\text{-int}$ $y=0$ $x-3\cdot 0=9$ $x=9$ $(9,0)$ | $y\text{-int}$ $x=0$ $0-3y=9$ $-3y=9$ $-3y=9$ $y=-3$ $(0,-3)$ |
|---|---|

4. $y = 7x + 5$

| | |
|--|--|
| $x\text{-int}$ $y=0$ $0=7x+5$ $-5=7x$ $\frac{-5}{7}=\frac{7x}{7}$ $x=-\frac{5}{7}$ $(-\frac{5}{7}, 0)$ | $y\text{-int}$ $x=0$ $y=7\cdot 0+5$ $y=5$ $(0, 5)$ |
|--|--|

5. $y = 6x$

| | |
|---|--|
| $x\text{-int}$ $y=0$ $0=6x$ $0=x$ $(0,0)$ | $y\text{-int}$ $x=0$ $y=6\cdot 0$ $y=0$ |
|---|--|

6. $-4x + y = 10$

| | |
|---|--|
| $x\text{-int}$ $y=0$ $-4x=10$ $\frac{-10}{-4}=\frac{x}{-4}$ $x=-\frac{5}{2}$ $(-\frac{5}{2}, 0)$ | $y\text{-int}$ $x=0$ $-4\cdot 0+y=10$ $y=10$ $(0, 10)$ |
|---|--|

7. $2x - y = 9$

| |
|--|
| $2x$ $-2x$ $-y = -2x + 9$ $\frac{-y}{-1} = \frac{-2x + 9}{-1}$ $y = 2x - 9$ $m=2$ |
|--|

8. $4x = 2 + y$

| |
|---|
| $4x$ -2 $4x - 2 = y$ $y = 4x - 2$ $m=4$ |
|---|

9. $\frac{5y}{3} = \frac{-3x-10}{5}$

| |
|---|
| $\frac{5y}{3}$ $\frac{-3x-10}{5}$ $y = -\frac{3}{5}x - 2$ $m = -\frac{3}{5}$ |
|---|

10. $4x + 6y = 12$

| |
|--|
| $4x$ $-4x$ $6y = -4x + 12$ $\frac{6y}{6} = \frac{-4x + 12}{6}$ $y = -\frac{2}{3}x + 2$ $m = -\frac{2}{3}$ |
|--|

11. (2, 3) (4, 5)

$$m = \frac{5-3}{4-2} = \frac{2}{2} = 1$$

$$y-3 = 1(x-2) \quad y = mx + b$$

$$\begin{array}{r} y-3 = x-2 \\ +3 \quad +3 \end{array}$$

$$\begin{array}{r} y = x+1 \\ -x \quad -x \\ \hline -x+y = 1 \\ \text{or} \\ x-y = -1 \end{array}$$

$$y = mx + b$$

$$3 = 1 \cdot 2 + b$$

$$3 = 2 + b$$

$$1 = b$$

$$y = 1x + 1$$

$$-x + y = 1$$

$$\text{or}$$

$$x - y = -1$$

12. (-4, 6) (2, -2)

$$m = \frac{-2-6}{2-(-4)} = \frac{-8}{6} = -\frac{4}{3}$$

$$3[y-6] = [-\frac{4}{3}(x+4)] \cdot 3$$

$$3y-18 = -4(x+4) \quad y = mx + b$$

$$\begin{array}{r} 3y-18 = -4x-16 \\ +18 \quad +18 \end{array} \quad \text{or } b = \frac{4}{3} \cdot 4 + b$$

$$\begin{array}{r} 3y = -4x+2 \\ +4x \quad +4x \end{array} \quad \frac{16}{3} = 6 = \frac{16}{3} + b$$

$$\begin{array}{r} 3y = -4x+2 \\ +4x \quad +4x \end{array} \quad \frac{-16}{3} = \frac{-16}{3} + b$$

$$\begin{array}{r} 4x+3y = 2 \\ +4x \quad +4x \end{array} \quad \frac{2}{3} = b$$

$$\begin{array}{r} 4x+3y = 2 \\ +4x \quad +4x \end{array} \quad 3(y = -\frac{4}{3}x + \frac{2}{3})$$

$$\begin{array}{r} 3y = -4x + \frac{2}{3} \\ +4x \quad +4x \end{array} \quad 3y = -4x + \frac{2}{3}$$

$$\begin{array}{r} 4x+3y = 2 \\ +4x \quad +4x \end{array} \quad 4x+3y = 2$$

13. (-4, 2) m = 3

$$y-2 = 3(x+4) \quad 2 = 3(-4) + b$$

$$\begin{array}{r} y-2 = 3x+12 \\ +2 \quad +2 \end{array} \quad 2 = -12 + b$$

$$\begin{array}{r} y = 3x+14 \\ -3x \quad -3x \end{array} \quad 14 = b$$

$$\begin{array}{r} y = 3x+14 \\ -3x \quad -3x \end{array} \quad y = 3x+14$$

$$\begin{array}{r} -3x+y = 14 \\ \text{or} \\ 3x-y = -14 \end{array} \quad -3x+y = 14$$

$$\begin{array}{r} -3x+y = 14 \\ \text{or} \\ 3x-y = -14 \end{array}$$

14. (1, 2) m = $\frac{4}{5}$ $2 = \frac{4}{5}(1) + b$

$$y-2 = \frac{4}{5}(x-1) \quad 2 = \frac{4}{5} + b$$

$$5(y-2) = 4(x-1) \quad \frac{4}{5} - \frac{4}{5}$$

$$\begin{array}{r} 5y-10 = 4x-4 \\ +10 \quad +10 \end{array} \quad 1\frac{1}{5} = b$$

$$\begin{array}{r} 5y-10 = 4x-4 \\ +10 \quad +10 \end{array} \quad y = \frac{4}{5}x + \frac{6}{5}$$

$$\begin{array}{r} 5y = 4x+6 \\ -4x \quad -4x \end{array} \quad 5y = 4x+6$$

$$\begin{array}{r} 5y = 4x+6 \\ -4x \quad -4x \end{array} \quad 4x+5y = 6$$

$$\begin{array}{r} -4x+5y = 6 \\ \text{or} \\ 4x-5y = -6 \end{array}$$

$$\begin{array}{r} -4x+5y = 6 \\ \text{or} \\ 4x-5y = -6 \end{array}$$

15. (3, 1) m = 0 HOY

$$y-1 = 0(x-3) \quad y = 1$$

$$y-1 = 0$$

$$y = 1$$

$$\text{or}$$

$$1 = 0(3) + b$$

$$1 = b$$

$$y = 0x + 1 \rightarrow y = 1$$

16. $m = \frac{2}{3}$ y-int. (0, 5)

$$3(y = \frac{2}{3}x + 5)$$

$$3y = 2x + 15$$

$$\begin{array}{r} -2x \\ -2x \end{array}$$

$$\begin{array}{r} -2x + 3y = 15 \\ \text{or} \\ 2x - 3y = -15 \end{array}$$

$$y - 5 = \frac{2}{3}(x - 0)$$

$$y - 5 = \frac{2}{3}x$$

$$\begin{array}{r} 3y - 15 = 2x \\ -2x + 15 = 2x + 15 \\ \hline -2x + 3y = 15 \end{array}$$

17. $2y = -4x - 12$

$$\begin{array}{r} +4x \\ +4x \end{array}$$

$$4x + 2y = -12$$

18. $(\frac{2}{3}x + 3 = 6y - 15) \cdot 3$

$$\begin{array}{r} 2x + 9 = 18y - 45 \\ -18y - 9 \quad -18y - 9 \\ \hline \end{array}$$

$$\frac{2x - 18y}{2} = \frac{-54}{2}$$

$$x - 9y = -27$$

19. (-4, 2) (-3, 5)

$$m = \frac{5 - 2}{-3 - (-4)} = \frac{3}{1} = 3$$

$$y - 2 = 3(x + 4)$$

$$\text{or} \\ y - 5 = 3(x + 3)$$

20. (0, 0) (-4, -5)

$$m = \frac{-5 - 0}{-4 - 0} = \frac{5}{4}$$

$$y - 0 = \frac{5}{4}(x - 0)$$

$$y = \frac{5}{4}x$$

or

$$y + 5 = \frac{5}{4}(x + 4)$$

21. (-4, -3) (2, 7)

$$m = \frac{7 - (-3)}{2 - (-4)} = \frac{10}{6} = \frac{5}{3}$$

$$y + 3 = \frac{5}{3}(x + 4)$$

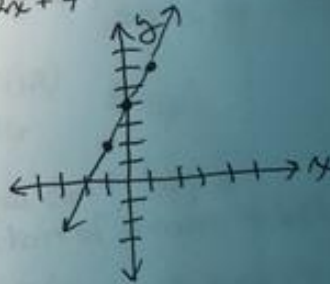
or

$$y - 7 = \frac{5}{3}(x - 2)$$

22. $2y = \frac{4x}{2} + \frac{8}{2}$

$$y = 2x + 4$$

| | |
|----|---|
| x | y |
| 0 | 4 |
| -1 | 2 |
| 1 | 6 |



23. $2x - 3y = 6$

$$2x = 6$$

$$x = 3$$

$$(3, 0)$$

$$-3y = 6$$

$$y = -2$$

$$(0, -2)$$



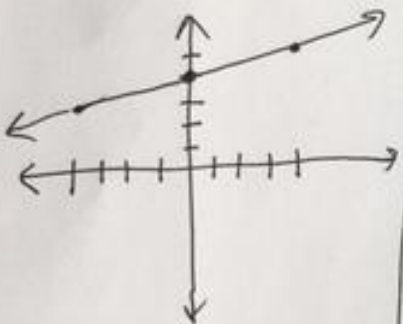
24. $4y - x = 16$

$4y = 16 \quad -x = 16$
 $y = 4 \quad x = -16$
 $(0, 4) \quad (-16, 0)$
 OR

$\frac{4y}{4} - \frac{x}{4} = \frac{16}{4}$

$y - \frac{1}{4}x = 4$
 $+\frac{1}{4}x \quad +\frac{1}{4}x$

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



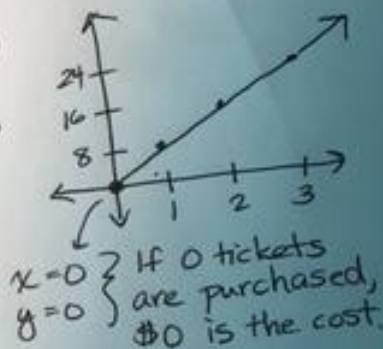
27. $y + \frac{3}{4}x = 12$
 $-\frac{3}{4}x \quad -\frac{3}{4}x$

$y = -\frac{3}{4}x + 12$
 y-int not 0
 not direct variation

28 a. $y = 8x$, $x =$ number of tickets purchased

b.

| x | y |
|---|----|
| 0 | 0 |
| 1 | 8 |
| 2 | 16 |



30. The horizontal change in the denominator of slope is zero.

31. $m = 25 - 0.15n$
 $D: n: 0 \leq n \leq 167$
 $m: 0 \leq m \leq 25$

c. $y = 8(12) = 96$
 $y = 96$ \$96

25. $\frac{2y}{2} = \frac{3x}{2}$

$y = \frac{3}{2}x$ Yes
 $k = \frac{3}{2}$

$\frac{166.6}{100} = 1.666$

d. No you can't buy a fraction of a movie ticket.

29. $3x + 2y = 6$
 $-3x \quad -3x$

$\frac{2y}{2} = \frac{-3x + 6}{2}$

$y = -\frac{3}{2}x + 3$

$m = -\frac{3}{2}$

perp. $m = +\frac{2}{3} \rightarrow A$

A. $4x - 6y = 3$
 $-4x \quad -4x$

$\frac{-6y}{-6} = \frac{-4x + 3}{-6}$

$y = \frac{2}{3}x - \frac{1}{2}$

26. $4y - 7x = 0$
 $+7x \quad +7x$

$\frac{4y}{4} = \frac{7x}{4}$

$y = \frac{7}{4}x$ Yes
 $k = \frac{7}{4}$