

Student Name _____

Parent Sign _____

Algebra
Ch. 17
Review

1) Tom $y = 3x + 21$ $\left\{ \begin{array}{l} m = \frac{3}{1} \\ y\text{-int} = 21 \end{array} \right.$
 Nita $y = 4x + 14$ $\left\{ \begin{array}{l} m = \frac{4}{1} \\ y\text{-int} = 14 \end{array} \right.$
 (D)

2) $y = 2x + 1$ $\left\{ \begin{array}{l} m = \frac{2}{1} \\ y\text{-int} = 1 \end{array} \right.$
 $y = -3x - 3$ $\left\{ \begin{array}{l} m = \frac{-3}{1} = \frac{3}{-1} \\ y\text{-int} = -3 \end{array} \right.$
 (D)

3) $y = x + 2$ $\left\{ \begin{array}{l} m = \frac{1}{1} \\ y\text{-int} = 2 \end{array} \right.$
 $y = 3x - 3$ $\left\{ \begin{array}{l} m = \frac{3}{1} \\ y\text{-int} = -3 \end{array} \right.$
 (C)

4) $y = -5x - 2$ $\left\{ \begin{array}{l} m = \frac{-5}{1} \\ y\text{-int} = -2 \end{array} \right.$
 $y = -5x - 4$ $\left\{ \begin{array}{l} m = \frac{-5}{1} \\ y\text{-int} = -4 \end{array} \right.$ (A)
 same slope, different y-int
 means parallel \Rightarrow no solution

5) $y = -2x - 3$ $\left\{ \begin{array}{l} m = \frac{-2}{1} \\ y\text{-int} = -3 \end{array} \right.$
 $y = -4x + 2$ $\left\{ \begin{array}{l} m = \frac{-4}{1} \\ y\text{-int} = 2 \end{array} \right.$
 different slopes
 mean one solution (A)

6) $y = 4x - 3$
 $y = 2x - 9$ so $\frac{2x - 9 = 4x - 3}{-2x \quad -2x}$
 $\frac{-9 = 2x - 3}{+3 \quad +3}$
 $\frac{-6 = 2x}{\frac{-6}{2} \quad \frac{2x}{2}}$
 $-3 = x$
 $y = 4x - 3$
 $y = 4(-3) - 3$
 $y = -12 - 3$ $(-3, -15)$
 $y = -15$ (D)

7) $y = 3x - 6$
 $y = 2x - 9$ so $\frac{2x - 9 = 3x - 6}{-2x \quad -2x}$
 $\frac{-9 = x - 6}{+6 \quad +6}$
 $-3 = x$
 $y = 3x - 6$
 $y = 3(-3) - 6$ $(-3, -15)$
 $y = -9 - 6$
 $y = -15$ (C)

8) $3y = -\frac{1}{2}x + 2$ so $3(-x + 9) = -\frac{1}{2}x + 2$
 $y = -x + 9$ $\frac{-3x + 27 = -\frac{1}{2}x + 2}{+\frac{1}{2}x \quad +\frac{1}{2}x}$
 $\frac{-2.5x + 27 = 2}{-27 \quad -27}$
 $\frac{-2.5x}{-2.5} = \frac{-25}{-2.5}$
 $y = -x + 9$
 $y = -10 + 9$
 $y = -1$ $(10, -1)$ $x = 10$ (C)

9) $4x + y = 3$ $4x + y = 3$
 $5x - y = 6$ $4(1) + y = 3$
 $\frac{9x}{9} = \frac{9}{9}$ $\frac{-4 + y = 3}{-4 \quad -4}$
 $y = -1$
 $x = 1$ $(1, -1)$ (B)

10) $x + 3y = 11$ (-2) $-2x + 6y = -22$
 $5x + 6y = 19$ $\frac{5x + 6y = 19}{3x \quad = \quad -\frac{3}{3}}$
 $\frac{3y}{3} = \frac{12}{3}$ $(-1, 4)$
 $y = 4$ (A)

11) $4x + 2y = 14$ (-2) $-8x - 4y = -28$
 $x + 4y = 21$ $x + 4y = 21$
 $\frac{x + 4y = 21}{+4y = 21}$ $\frac{-8x - 4y = -28}{-7x \quad = \quad -7}$
 $\frac{-1}{-1} = \frac{-7}{-7}$
 $\frac{4y = 20}{4 \quad 4}$ $(1, 5)$
 $y = 5$ (C)

$$\begin{array}{r} 12) -9x - 2y = 26 \quad (5) \\ -10x - 5y = 15 \quad (-2) \\ \hline -10x - 5y = 15 \\ -10(-4) - 5y = 15 \\ 40 - 5y = 15 \\ -40 \quad -40 \\ \hline -5y = -25 \\ -5 \quad -5 \\ \hline y = 5 \end{array}$$

$$\begin{array}{r} -45x - 10y = 130 \\ 20x + 10y = -30 \\ \hline -25x = 100 \\ -25 \quad -25 \\ \hline x = -4 \end{array}$$

$(-4, 5)$ (C)

$$13) \begin{array}{r} 2x = -2 + 2y \\ 4y = -1 + 3x \\ \hline 2x = -2 + 2y \quad 4y = -1 + 3x \\ -2y \quad -2y \quad -3x \quad -3x \\ \hline 2x - 2y = -2 \quad -3x + 4y = -1 \end{array}$$

$$\begin{array}{r} 2x - 2y = -2 \quad (2) \\ -3x + 4y = -1 \quad (-2) \\ \hline 2x - 2y = -2 \\ -3x + 4y = -1 \\ \hline 4x - 4y = -4 \\ -3x + 4y = -1 \\ \hline x = -5 \end{array}$$

14) $20 \text{ min} = \frac{20}{60} = \frac{1}{3} \text{ hr}$
 $30 \text{ min} = \frac{30}{60} = \frac{1}{2} \text{ hr}$ (use $rt = d$)

down $(B+C) \frac{1}{3} = 8 \quad (x3)$
 up $(B-C) \frac{1}{2} = 8 \quad (x2)$

$$\begin{array}{r} B+C = 24 \\ 20+C = 24 \\ -20 \quad -20 \\ \hline C = 4 \end{array}$$

4 mph (D)

$$\begin{array}{r} B+C = 24 \\ B-C = 16 \\ \hline 2B = 40 \\ \frac{2B}{2} = \frac{40}{2} \\ B = 20 \end{array}$$

$$\begin{array}{r} 4y = -1 + 3x \\ 4y = -1 + 3(-5) \\ 4y = -1 - 15 \\ \frac{4y}{4} = \frac{-16}{4} \\ y = -4 \end{array}$$

$(-5, -4)$ (A)

15) $y = 5x + 9000$
 $y = 30x$

$$\begin{array}{r} 30x = 5x + 9000 \\ -5x \quad -5x \\ \hline 25x = 9000 \\ \frac{25x}{25} = \frac{9000}{25} \\ x = 360 \end{array}$$

(B)

17) $y < 3x - 4$ $m = \frac{3}{1}$
 $y\text{-int} = -4$

test $(0, 0)$
 $0 < 3(0) - 4$
 $0 < 0 - 4$
 $0 < -4$
 false (A)

16) $y = 6x + 1200$ so
 $y = 2x + 800 + 1600$

$$\begin{array}{r} 2x + 800 + 1600 = 6x + 1200 \\ 2x + 2400 = 6x + 1200 \\ -2x \quad -2x \\ \hline 2400 = 4x + 1200 \\ -1200 \quad -1200 \\ \hline 1200 = 4x \\ \frac{1200}{4} = \frac{4x}{4} \\ 300 = x \end{array}$$

(C)

18) $4x + 8y \geq 18$

$$m = -\frac{A}{B} = -\frac{4}{8} = -\frac{1}{2}$$

$$y = \frac{C}{B} = \frac{18}{8} = \frac{9}{4} = 2\frac{1}{4}$$

$y \geq$ so solid
 test $(0, 0)$
 $4(0) + 8(0) \geq 18$
 $0 + 0 \geq 18$
 $0 \geq 18$
 false (B)

19) $8x - 2y \leq 14$

$$\begin{array}{r} 8x - 2y \leq 14 \\ -8x \quad -8x \\ \hline -2y \leq -8x + 14 \\ -2 \quad -2 \quad -2 \\ \hline y \geq 4x - 7 \end{array}$$

(D) (reverse)

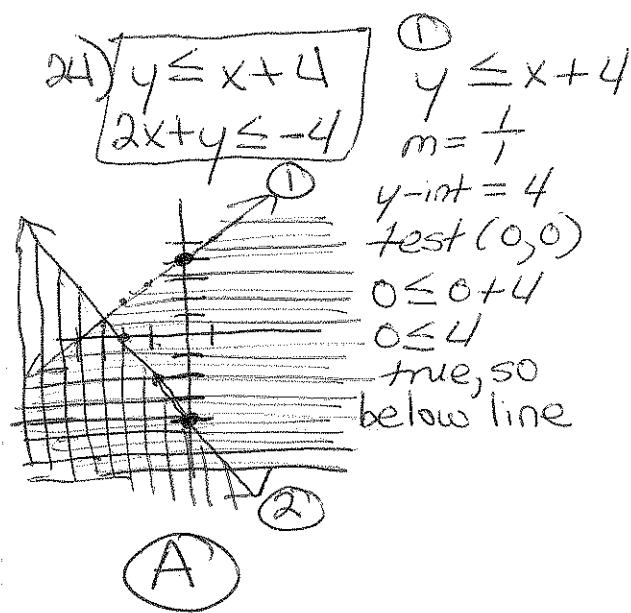
21) vertical, so
 $x \leq 1$ (right)
 $x > 1$ test $(0, 0)$
 $0 > 1$ works since $(0, 0)$ not shaded
 false (D)

20) slope = $\frac{4}{-1} = -4$
 $y\text{-int} = 1$
 $y = -4x + 1$
 below, so test $(0, 0)$
 $y \leq -4x + 1$
 $0 \leq -4(0) + 1$
 $0 \leq 0 + 1$
 $0 \leq 1$
 true (D)

22) $9x + 11y \leq 38$
 $m = -\frac{A}{B} = -\frac{9}{11}$
 $y = \frac{C}{B} = \frac{38}{11} = 3\frac{5}{11}$
 test (0,0)
 $9(0) + 11(0) \leq 38$
 $0 + 0 \leq 38$
 $0 \leq 38$
 true
 (C)

23) $1.4x + 7y \geq 21$ test (1,2)
 $1.4(1) + 7(2) \geq 21$
 $1.4 + 14 \geq 21$
 $15.4 \geq 21$
 false
 $10x - 2y \geq 16$
 test (4,1) $1.4(4) + 7(1) \geq 21$
 $5.6 + 7 \geq 21$
 $12.6 \geq 21$
 false
 test (2,2) $1.4(2) + 7(2) \geq 21$
 $2.8 + 14 \geq 21$
 $16.8 \geq 21$
 false
 test (5,2) $1.4(5) + 7(2) \geq 21$
 $7 + 14 \geq 21$
 $21 \geq 21$
 true

test (5,2)
 $10(5) - 2(2) \geq 16$
 $50 - 4 \geq 16$
 $46 \geq 16$
 true
 (D)



25) line 1
 slope = $\frac{1}{1} = 1$
 $y\text{-int} = 8$
 $y \leq x + 8$
 below, try \leq
 $y \leq x + 8$
 test (0,0)
 $0 \leq 0 + 8$
 $0 \leq 8$
 true

line 2
 slope = $\frac{3}{-1} = -3$
 $y\text{-int} = -8$
 $y \geq -3x - 8$
 above, try \geq
 $y \geq -3x - 8$
 test (0,0)
 $0 \geq -3(0) - 8$
 $0 \geq 0 - 8$
 $0 \geq -8$
 true

$y \geq -3x - 8$
 $+3x \quad +3x$
 $3x + y \geq -8$
 TYPO

$y \leq x + 8$
 $3x + y \geq -8$