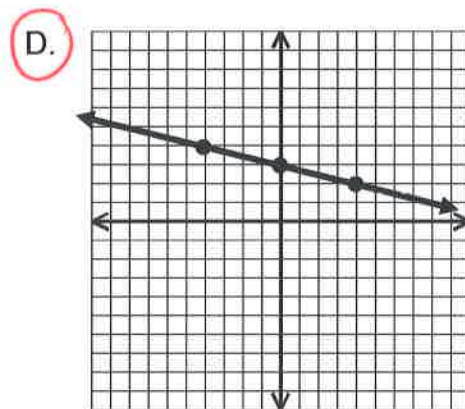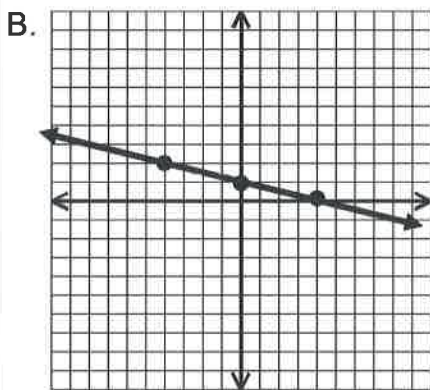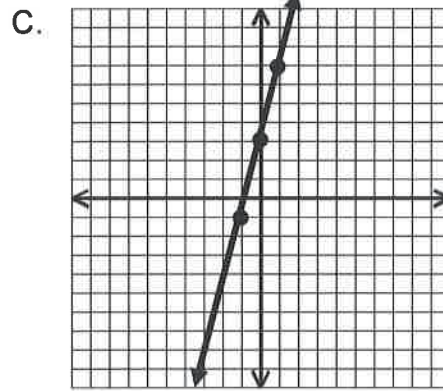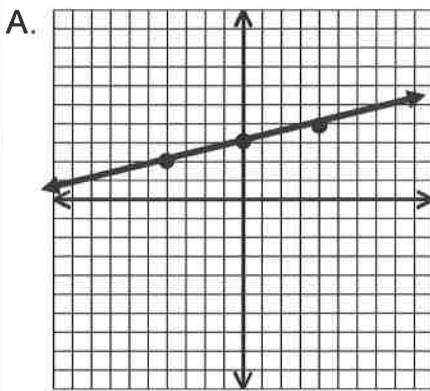NAME_____DATE_____PER._____

REVIEW #14: POLYNOMIALS & FACTORING

____D____ 1. Which graph represents the equation x + 4y = 12?

$x + 4y = 12$
$-x \qquad -x$
_____
$\dfrac{4y}{4} = \dfrac{-x}{4} + \dfrac{12}{4}$

$y = -\dfrac{1}{4}x + 3$

A.

C.

B.

D.

____B____ 2. A group of students are going on a field trip. If the students take 3 vans and 1 car, they can transport 22 people. If they take 2 vans and 4 cars, they can transport 28 people. Which system of equations can be used to find c, the number of people that can fit in each car, and v, the number of people that can fit in each van?

① $3v + c = 22$
② $2v + 4c = 28$

A. $3v = 22$
$2v + 4c = 28$

B. $3v + c = 22$
$2v + 4c = 28$

C. $3v + 2c = 22$
$v + 4c = 28$

D. $v + 4c = 22$
$3v + 2c = 28$

____A____ 3. Find the x- and y-intercepts of $8x - 12y = -24$.

Duck & Cover :

$\dfrac{8x}{8} = \dfrac{-24}{8}$ \qquad $\dfrac{-12y}{-12} = \dfrac{-24}{-12}$

$x = -3$ \qquad\qquad $y = 2$

$(-3, 0)$ \qquad\qquad $(0, 2)$

A. x-intercept: (-3, 0)
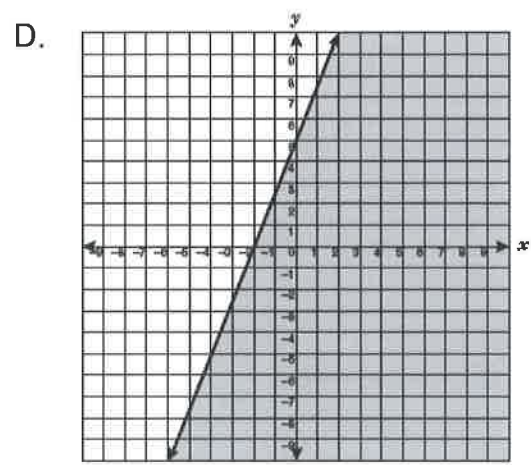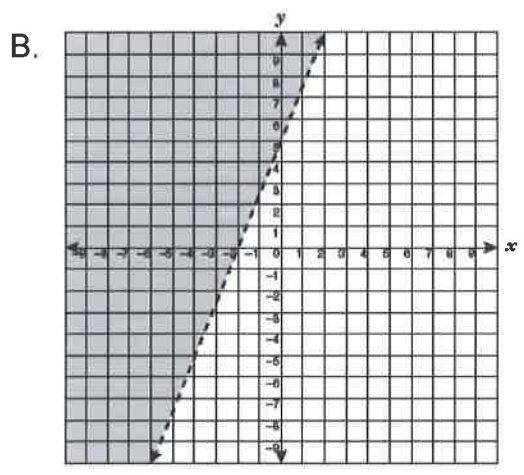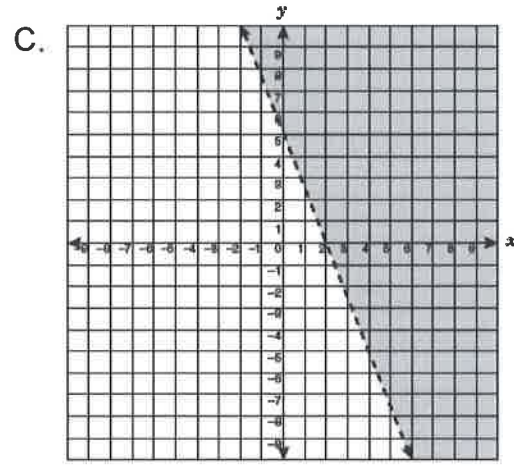y-intercept: (0, 2)

C. x-intercept: (2, 0)
y-intercept: (0, -3)

B. x-intercept: (0, -3)
y-intercept: (2, 0)

D. x-intercept: (0, 2)
y-intercept: (-3, 0)

A 4. Which graph best represents the solution set of $5x + 2y \leq 10$?

$$5x + 2y \leq 10$$
$$-5x \qquad -5x$$
$$\overline{\qquad\qquad}$$
$$\frac{2y}{2} \leq \frac{-5x}{2} + \frac{10}{2}$$
$$y \leq \frac{-5}{2}x + 5$$

solid, below

A.

C.

B.

D.
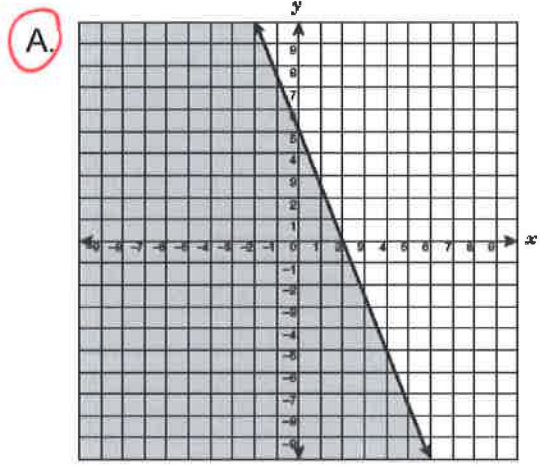
A 5. What is the x-coordinate of the solution to the following system?

$$7x + 15y = 32$$
$$x - 3y = 20$$

$$\begin{bmatrix} 7 & 15 & 32 \\ 1 & -3 & 20 \end{bmatrix} \rightarrow \begin{bmatrix} 1 & 0 & 11 \\ 0 & 1 & -3 \end{bmatrix}$$

$$(\overset{x}{11}, \overset{y}{-3})$$

A. 11   C. -34

B. -3   D. 4

C 6. Which function represents the line that contains the point $(\overset{x}{3}, \overset{y}{-2})$ and has a slope of 5?

$$y = mx + b$$
$$-2 = 5(3) + b$$
$$-2 = 15 + b$$
$$-15 \quad -15$$
$$\overline{\qquad\qquad}$$
$$-17 = b$$

A. $y = 5x - 2$ C. $y = 5x - 17$

B. $y = 5x + 3$ D. $y = 5x + 12$

B 7. What is the relationship between the lines $2x + 4y = 12$ and $3x + 6y = -12$?

$$\frac{-2x \quad | \quad -2x}{\frac{4y}{4} = \frac{-2x+12}{4} \quad 4}$$

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

$$\frac{-3x \quad | \quad -3x}{\frac{6y}{6} = \frac{-3x-12}{6} \quad 6}$$

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

same slope

A. The graphs are two perpendicular lines.

(B.) The graphs are two parallel lines.

C. The graphs have the same y-intercept.

D. The graphs have the same x-intercept.

B 8. Solve for x: $2(3x + 2) - 4(x - 7) = 8(2x - 3)$

$$6x + 4 - 4x + 28 = 16x - 24$$

$$\frac{2x + 32 = 16x - 24}{-2x \qquad\qquad -2x}$$

$$\frac{32 = 14x - 24}{+24 \qquad\qquad +24}$$

$$\frac{56}{14} = \frac{14x}{14}$$

$$4 = x$$

A. x = -2

(B.) x = 4

C. x = $\frac{6}{7}$

D. x = 0

D 9. If the slope of the equation $y = -2x + 6$ is changed to 1 and the y-intercept is changed to (0, -3), which statement best describes this situation?

A. The new line is perpendicular to the original line.

B. The new line is parallel to the original line.

C. The new line and the original line have the same y-intercept.

(D.) The new line and the original line have the same x-intercept.

new

old
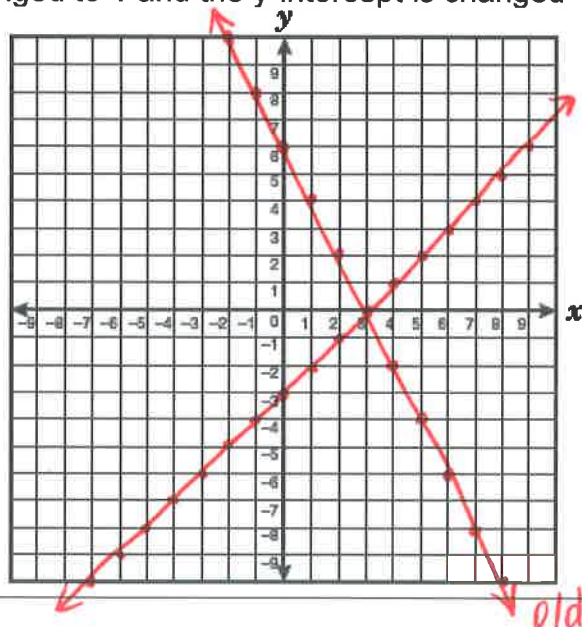
D _____ 10. Graph y < x + 4 on the grid below. Which coordinate point represents a solution of this inequality?

$y < x + 4$
dotted,
below

A. (-7, 0)

B. (-1, 3)

C. (3, 9)

D. (2, -4)

B _____ 11. For the line $y = mx + b$, where $m < 0$ and $b > 0$, what change would occur if m is multiplied by -2 and b remains the same?

negative

A. The y-intercept would become negative.   C. The resulting line would be parallel to the original.

B. The slope would become positive.   D. The resulting line would pass through the origin.

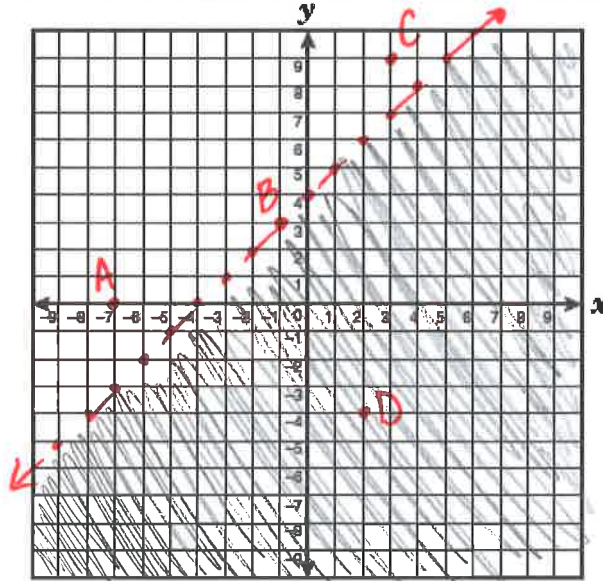**D** _____ 12. Each of the following tables contains elements of an (x, y) relationship. Which table contains four points that cannot lie on the graph of a function of x?

↳ all x's are different

A.

x	1	2	3	4
y	-1	-2	-3	-4

C.

x	0	4	6	10
y	-1	5	-1	3

B.

x	-2	0	-4	5
y	3	3	3	3

D.

x	1	2	3	1
y	3	4	5	6

A _____ 13. A rectangle has a width of x – 6 and a length of 3x – 2. Which expression represents the area of the rectangle?

↳ $\ell \cdot w$

x   -6

| 3x | $3x^2$ | -18x |
| -2 | -2x | 12 |

$3x^2 - 20x + 12$

A. $3x^2 - 20x + 12$ C. $3x^2 - 11x + 12$

B. $3x^2 + 12$ D. $4x - 8$

Simplify each expression.

14. $4(x^2 - 4x + 6) - 2x(x - 5)$	15. $2(x - 4) - 3x(x - 5)$
$4x^2 - 16x + 24 - 2x^2 + 10x$	$2x - 8 - 3x^2 + 15x$
$2x^2 - 6x + 24$	$-3x^2 + 17x - 8$

Answer the following.

16. Find the product of $(5x + 1)$ and $(4x - 3)$.

	$5x$	1
$4x$	$20x^2$	$4x$
-3	$-15x$	-3

$20x^2 - 11x - 3$

17. The perimeter of a triangle is $8x^2 - 2x + 6$. If two sides of the triangle are $x^2 - x$ and $4x + 3$, what is the length of the missing side in terms of x?

sum of 2 sides

$8x^2 - 2x + 6 - (x^2 + 3x + 3)$

$8x^2 - 2x + 6 - x^2 - 3x - 3$

$7x^2 - 5x + 3$

Factor completely.

18. $7x^2 - 17x + 6 = $ __$(7x - 3)(x - 2)$__

	$7x$	-3
x	$7x^2$	$-3x$
-2	$-14x$	6

$S = -17x$
$P = 42x^2$

$-1 \mid -42$
$-2 \mid -21$
$-3 \mid -14$
$-6 \mid -7$

19. $\dfrac{9x^2}{3} - \dfrac{21x}{3} + \dfrac{6}{3} = $ __$(x - 2)(3x - 1)$__

$3(3x^2 - 7x + 2)$

	x	-2
$3x$	$3x^2$	$-6x$
-1	$-1x$	2

$S = -7x$
$P = 6x^2$

$\boxed{-1 \mid -6}$
$-2 \mid -3$

20. $2x^2 + 13x + 15 = $ __$(x + 5)(2x + 3)$__

	x	5
$2x$	$2x^2$	$10x$
3	$3x$	15

$S = 13x$
$P = 30x^2$

$1 \mid 30$
$2 \mid 15$
$\boxed{3 \mid 10}$

21. $\dfrac{2x^3}{2x} + \dfrac{6x^2}{2x} - \dfrac{36x}{2x} = $ __$2x(x + 6)(x - 3)$__

$2x(x^2 + 3x - 18)$

	x	6
x	x^2	$6x$
-3	$-3x$	-18

$S = 3x$
$P = -18x^2$

$-1 \mid 18$
$-2 \mid 9$
$\boxed{-3 \mid 6}$

22. $\dfrac{5x^2}{5} - \dfrac{80}{5} = \underline{5(x+4)(x-4)}$

$5(x^2 - 16)$

D.O.T.S.

23. $x^2 - 2x + 1 = \underline{(x-1)(x-1)}$

$S = -2x$
$P = 1x^2$

$\boxed{-1 \quad -1}$

	x	-1
x	x^2	$-1x$
-1	$-1x$	1

24. $10x^2 - 17x + 3 = \underline{(5x-1)(2x-3)}$

	$5x$	-1
$2x$	$10x^2$	$-2x$
-3	$-15x$	3

$S = -17x$
$P = 30x^2$

-1	-30
-2	-15
-3	-10
-5	-6

(−2, −15 circled)

25. $4x^2 - 49 = \underline{(2x+7)(2x-7)}$

D.O.T.S.

26. $\dfrac{6x^2}{2} - \dfrac{40x}{2} + \dfrac{50}{2} = \underline{2(3x-5)(x-5)}$

$2(3x^2 - 20x + 25)$

	$3x$	-5
x	$3x^2$	$-5x$
-5	$-15x$	25

$S = -20x$
$P = 75x^2$

-1	-75
-3	-25
-5	-15

(−5, −15 circled)

27. $x^2 + 11x - 42 = \underline{(x-6)(x+7)}$

	x	-6
x	x^2	$-6x$
7	$7x$	-42

$S = 11x$
$P = -42x^2$

-1	42
-2	21
-3	14
-6	7

28. $\dfrac{5x^2}{5} + \dfrac{180}{5} = \underline{5(x^2 + 36)}$

$5(x^2 + 36)$

NOT a D.O.T.S.

29. $x^2 - 36 = \underline{(x+6)(x-6)}$

D.O.T.S.

30. Which expression below is equivalent to $x^2 - 2x - 35$?

$S = -2x$
$P = -35x^2$

1	-35
5	-7

A. $(x + 7)(x - 5)$

B. $(x - 7)(x - 5)$

C. $(x + 7)(x + 5)$

D. $(x - 7)(x + 5)$

E. None of these.

	X	5
X	x^2	5X
-7	-7x	-35

$(x+5)(x-7)$

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31. Which of the following shows $3x^2 + 2x - 5$ in factored form?

$S = 2x$
$P = -15x^2$

-1	15
-3	5

A. $(x + 1)(3x + 5)$

B. $(x + 1)(3x - 5)$

C. $(x - 1)(3x - 5)$

D. $(x - 1)(3x + 5)$

	3X	5
X	$3x^2$	5X
-1	-3X	-5

$(3x+5)(x-1)$