1. Solve. $3x + 6 = 33$

$3x + 6 = 33$

$3x = 33 - 6$

$3x = 27$

$\dfrac{3x}{3} = \dfrac{27}{3}$

$x = 9$

2. The ordered pair (2, 17) is a solution to which linear equation?

$y = \dfrac{1}{17}x + \dfrac{1}{4}$ $17 = \dfrac{1}{17}(2) + \dfrac{1}{4}$ $17 = \dfrac{2}{17} + \dfrac{1}{4}$ $17 = \dfrac{2(4)}{68} + \dfrac{1(17)}{68}$ $17 = \dfrac{8}{68} + \dfrac{17}{68}$ $17 = \dfrac{25}{68}$ *no*	$5 + 6x = 17$ $5 + 6(2) = 17$ $5 + 12 = 17$ $17 = 17$ *yes*	$6 + 6x = y$ $6 + 6(2) = 17$ $6 + 12 = 17$ $18 = 17$ *no*

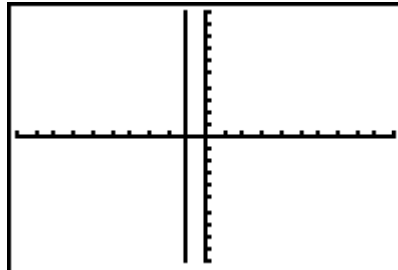|	
3. Translate into an equation and solve. The sum of seven times a number and seven is seventy-seven. Find the number. $7x + 7 = 77$ $7x = 77 - 7$ $7x = 70$ $\dfrac{7x}{7} = \dfrac{70}{7}$ $x = 10$	4. Which is the graph of $x = -1$? x = number is a vertical line at that number

5. Factor by grouping: $4x^2 - 12x + 36x - 108$ $4x^2 - 12x + 36x - 108$ $4(x^2 - 3x + 9x - 27)$ $4[x(x-3) + 9(x-3)]$ $4(x-3)(x+9)$	6. Simplify: $(5x^2 - 9x - 2) + (x^2 - 9x - 4)$ $(5x^2 - 9x - 2) + (x^2 - 9x - 4)$ $5x^2 - 9x - 2 + x^2 - 9x - 4$ $6x^2 - 18x - 6$

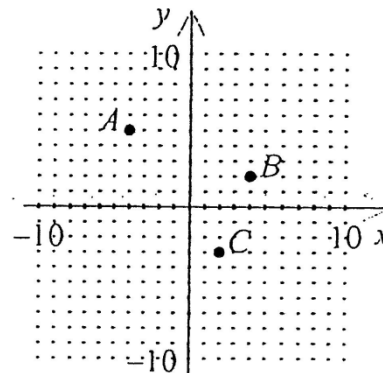|	
7. A used tire store is selling minimally-worn tires for $36 off the new-tire-price of $60 each. Find the discount rate on these tires. $amt - (amt)(discount\_rate) = total$ $60 - (60)(r) = 24$ $60 - 60r = 24$ $60 - 24 = 60r$ $36 = 60r$ $\dfrac{36}{60} = \dfrac{60r}{60}$ $0.6 = r$ $r = 60\%$	8. Which graph shows the points A(-4, 5), B(4, 2), and C(2, -3), on the same axes?

9. Simplify: $-3x^2(5x^3 + 2y)$ $-3x^2(5x^3 + 2y)$ $-15x^5 - 6x^2y$	10. Factor: $-4x^4 + 4x^2$ $-4x^4 + 4x^2$ $-4x^2(x^2 - 1)$ $-4x^2(x+1)(x-1)$

11. Solve. $3x - 5 = x + 4$ $3x - 5 = x + 4$ $3x - x = 4 + 5$ $2x = 9$ $\dfrac{2x}{2} = \dfrac{9}{2}$ $x = \dfrac{9}{2}$	12. Find the slope of the line that contains (3, -6) and (6, -4) $m = \dfrac{y_2 - y_1}{x_2 - x_1}$ $m = \dfrac{(-4) - (-6)}{(6) - (3)}$ $m = \dfrac{-4 + 6}{3}$ $m = \dfrac{2}{3}$

13. Simplify: $\sqrt{72}$ $\sqrt{72}$ $= \sqrt{2 \cdot 2 \cdot 2 \cdot 3 \cdot 3}$ $= 2 \cdot 3\sqrt{2}$ $= 6\sqrt{2}$	14. Emily has $167 in her savings account. She withdraws $112, deposits $48, and then withdraws $81. Which shows the ending balance of her account? 167 - 112 + 48 - 81 = $22

15. Subtract. $-16 - (-14)$ $-16 - (-14)$ $= -16 + 14$ $= -2$	16. Simplify: $\dfrac{x^2}{x+2} \cdot \dfrac{x^2 - 5x - 14}{x^2 - 7x}$ $\dfrac{x^2}{x+2} \cdot \dfrac{x^2 - 5x - 14}{x^2 - 7x}$ $= \dfrac{x^2}{x+2} \cdot \dfrac{(x-7)(x+2)}{x(x-7)}$ $= \dfrac{x^2}{1} \cdot \dfrac{x-7}{x(x-7)}$ $= \dfrac{x^2}{1} \cdot \dfrac{1}{x}$ $= \dfrac{x}{1} \cdot \dfrac{1}{1}$ $= x$

17. Evaluate: $\left(5 \cdot 6^2 - 5 \cdot 3^2\right) \div (3+2)$	18. Simplify: $(-5y) + 7 + 6x + y - 8x$
$\left(5 \cdot 6^2 - 5 \cdot 3^2\right) \div (3+2)$ $= (5 \cdot 36 - 5 \cdot 3^2) \div (3+2)$ $= (5 \cdot 36 - 5 \cdot 9) \div (3+2)$ $= (180 - 5 \cdot 9) \div (3+2)$ $= (180 - 45) \div (3+2)$ $= 135 \div (3+2)$ $= 135 \div 5$ $= 27$	$(-5y) + 7 + 6x + y - 8x$ $= -5y + 7 + 6x + y - 8x$ $= -2x - 4y + 7$

19. Factor completely: $18x^2 - 21x - 60$	20. Solve. $-5x - 10 < -20$
$18x^2 - 21x - 60$ $3(6x^2 - 7x - 20)$ $3(6x^2 - 15x + 8x - 20)$ $3[3x(2x-5) + 4(2x-5)]$ $3(2x-5)(3x+4)$	$-5x - 10 < -20$ $-5x < -20 + 10$ $-5x < -10$ $\dfrac{-5x}{-5} > \dfrac{-10}{-5}$ $x > 2$

21. An executive assistant bought some 26 cent stamps and some 33 cent stamps. All together she bought 103 stamps for a total value of $30.07. How many stamps of each type did she buy?

$(.26)(x) + (.33)(103 - x) = 30.07$

$.26x + 33.99 - .33x = 30.07$

$-.07x + 33.99 = 30.07$

$-.07x = 30.07 - 33.99$

$-.07x = -3.92$

$\dfrac{-.07x}{-.07} = \dfrac{-3.92}{-.07}$

$x = 56$

so 26 cent stamps: 56 and 33 cent stamps: 47

22. Simplify: $-5\left[9x-8(6-x)\right]$

$-5\left[9x-8(6-x)\right]$

$=-5[9x-48+8x]$

$=-5[17x-48]$

$=-85x+240$

---

23. Simplify: $\dfrac{-36x^5y^2}{-6x^4y^4}$

$\dfrac{-36x^5y^2}{-6x^4y^4}$

$=\dfrac{6x^5y^2}{1x^4y^4}$

$=\dfrac{6x^1y^2}{y^4}$

$=\dfrac{6x}{y^2}$

---

24. Simplify: $\dfrac{24x^5+18x^3-18x}{6x^4}$

$\dfrac{24x^5+18x^3-18x}{6x^4}$

$=\dfrac{24x^5}{6x^4}+\dfrac{18x^3}{6x^4}-\dfrac{18x}{6x^4}$

$=\dfrac{4x^5}{1x^4}+\dfrac{3x^3}{1x^4}-\dfrac{3x}{1x^4}$

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

$=4x+\dfrac{3}{x}-\dfrac{3}{x^3}$

---

25. Write an equation for a line, in slope-intercept form, that passes through the point (-5, 2) and has slope 2?

Step 1: find m
m = 2

Step 2: plug in given point for x, y and m from step 1 into y=mx+b and solve for b
$y=mx+b$
$2=2(-5)+b$
$2=-10+b$
$2+10=b$
$12=b$

Step 3: Write answer
$y=mx+b$
$y=2x+12$