

Proudly Completed By: Key
 Study Guide Unit 3 Review

Don't forget to leave answers in standard form!!

Simplify. Your answer should be in standard form.

1. $x(x-3)$ $x^2 - 3x$	2. $-x(x+1)$ $-x^2 - x$	3. $-2x(-2x+1)$ $4x^2 - 2x$
4. $-2(x+x^2)$ $-2x^2 - 2x$	5. $(x+1)(x+3)$ $x^2 + 2x + 3$	6. $(x-1)(x+1)$ $x^2 - 1$
7. $(2x-3)(-2x)$ $-4x^2 + 6x$	8. $x(x^2+2x-1)$ $x^3 + 2x^2 - x$	9. $2a(a^2 - 7a + 2a)$ $2a(a^2 - 5a)$ $2a^3 - 10a^2$
10. $4x(3x-1)^2$ $4x(3x-1)(3x-1)$ $4x(9x^2 - 6x + 1)$ $36x^3 - 24x^2 + 4x$	11. $(x-1)(x^2+3x+1)$ $x^3 + 3x^2 + x - x^2 - 3x - 1$ $x^3 + 2x^2 - 2x - 1$	12. $(2x-5) - (3-4x+x^2)$ $2x - 5 - 3 + 4x - x^2$ $-x^2 + 6x - 8$
13. $(4x^2+3x^2-2) + (5x+3x^2+1)$ $3x^3 + 7x^2 + 5x - 1$	14. $(x+1) - 2(1-4x+x^2)$ $x + 1 - 2 + 8x - 2x^2$ $-2x^2 + 9x - 1$	15. $(-2x^3+4x-2) + 3x(2x^2-2)$ $-2x^3 + 4x - 2 + 6x^3 - 6x$ $4x^3 - 2x - 2$

Fill in the blanks with definitions or steps or processes.

16. To determine the degree of polynomial, identify the largest exponent
 17. A polynomial is a monomial when there is one term
 18. A polynomial is a binomial when there are two terms
 19. A polynomial is a trinomial when there are three terms
 20. A polynomial is linear, quadratic, or cubic when the degree is 1, 2, or 3 respectively

Complete the table below

Expression	Degree	Constant, Linear, Quadratic, or Cubic?	Monomial, Binomial, or Trinomial?
21. $12x - 7$	1	linear	binomial
22. $x^2 + 3x - 17$	2	quadratic	trinomial
23. $-3 + x^3$	3	cubic	binomial
24. -8	0	constant	monomial

25. Simplify $(5x + 2)(5x - 2)$

$$25x^2 - 4$$

26. Simplify $(d - 2)(d + 2)(3d - 5)$

$$(d^2 - d - 6)(3d - 5)$$

$$3d^3 - 5d^2 - 3d^2 + 5d - 18d + 30$$

$$3d^3 - 8d^2 - 13d + 30$$

27. Find the area of the shaded region.

outside - inside

$$(x+5)(3x) - (x+3)(x+2)$$

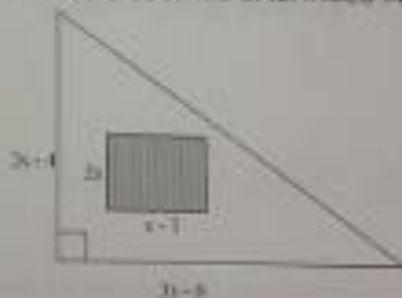
$$3x^2 + 15x$$

$$-(x^2 + 5x + 6)$$



$$2x^2 + 10x - 6 \text{ units}^2$$

28. Find the area of the UNSHADED Region.



outside - inside

$$\frac{1}{2}(2x-4)(3x-6) - (2x)(x-1)$$

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

$$3x^2 - 6x - 6x + 12 - 2x^2 + 2x$$

$$x^2 - 6x + 12 \text{ units}^2$$

Applications

$$w+5 + \frac{5w-2+w+3}{2} + 3 + \frac{2w-3}{2} + \frac{2w+2w-3}{2}$$

21.) Find the area and perimeter of the following rectangular shape.



Perimeter: $13w+7$ units

$$(5w-2)(w+5) + (2w)(2w-3)$$

$$5w^2 + 25w - 2w - 10 + 4w^2 - 6w$$

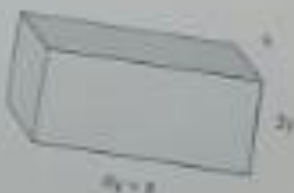
Area: $9w^2 + 17w - 10$ units²

22.) Find the volume of the following rectangular prism.

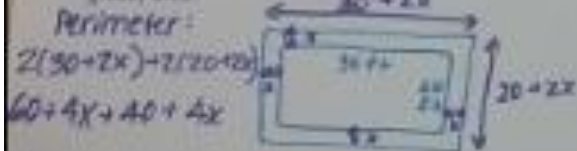
$$(y)(3y)(4y+8)$$

$$(3y^2)(4y+8)$$

$$12y^3 + 24y^2 \text{ units}^3$$



23.) Kara has a 30 foot by 20 foot area of grass reserved for her goats to rove beside her house. If she wants to fence in the entire area with a fence that is x feet wide, then what would be the combined perimeter and area of the fenced in grassy area?



$$(30+2x)(20+2x)$$

$$600 + 60x + 40x + 4x^2$$

Perimeter: $8x + 100$ feet

Area: $4x^2 + 100x + 600$ feet²

24.) If you are building a pool which has a length that is three less than 4 times the width, then find the perimeter and the area of this pool.



$$l = 4w - 3$$

$$2w + 2(4w - 3)$$

$$2w + 8w - 6$$

$$w(4w - 3)$$

Perimeter: $10w - 6$ units

Area: $4w^2 - 3w$ units²