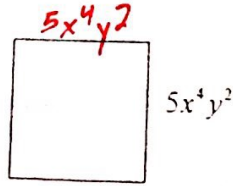


Polynomials, Area, and Perimeter

Name: KEY

Period: _____

1. What is the area of this square with sides of $5x^4y^2$?

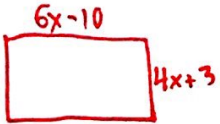


$$5x^4y^2 \cdot 5x^4y^2 = \boxed{25x^8y^4}$$

What is the perimeter of the same figure?

$$4(5x^4y^2) = \boxed{20x^4y^2}$$

2. Find the perimeter and area of a rectangle with a length of $(6x-10)$ and a width of $(4x+3)$.



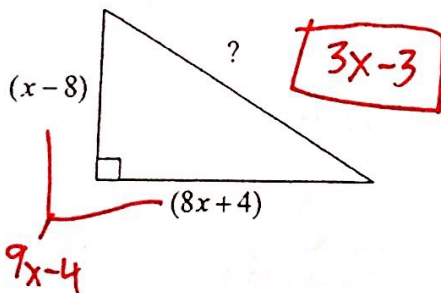
$$P: 2(6x-10) + 2(4x+3) = 12x-20 + 8x+6$$

$$A: (6x-10)(4x+3) \rightarrow 24x^2 + 18x - 40x - 30$$

Perimeter: $\boxed{20x-14}$

Area: $\boxed{24x^2 - 22x - 30}$

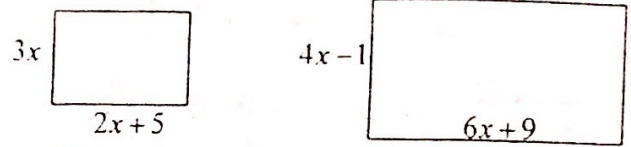
3. The perimeter of the triangle below is $(12x-7)$. Find the length of the missing side. $9x-4 + \boxed{} = 12x-7$



4. Find the length of the side of the square if the perimeter is $44x^3 + 36y$

$$\frac{44x^3 + 36y}{4} = \boxed{11x^3 + 9y}$$

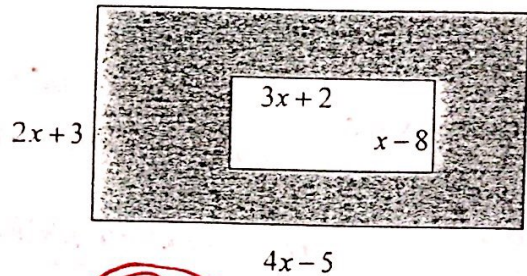
5. Find the total area of both rectangles.



$$3x(2x+5) + (4x-1)(6x+9) = 6x^2 + 15x + 24x^2 + 36x - 6x - 9 = 6x^2 + 15x + 24x^2 + 30x - 9$$

Total area: $\boxed{30x^2 + 45x - 9}$

6. Find the area of the shaded region.



$$(2x+3)(4x-5) - (3x+2)(x-8) = 8x^2 - 10x + 12x - 15 - (3x^2 - 24x + 2x - 16) = 8x^2 + 2x - 15 - (3x^2 - 22x - 16) = \boxed{5x^2 + 24x + 1}$$

7. Find the perimeter and area of a rectangle with length (6) and width $(x+2)$.


Area: $6(x+2)$
 Perimeter: $6 + 6 + x + 2 + x + 2$

Perimeter: $\boxed{2x+16}$
 Area: $\boxed{6x+12}$

8. If the area of a rectangle with length $(4x)$ is $4x^2 + 12x$. Find the width.

$$4x(\boxed{x+3}) = 4x^2 + 12x$$

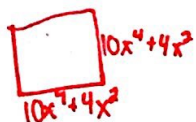
9. The length of a rectangular garden is 4 less than twice the width. Find the perimeter and area of the garden.

$l = 2w - 4$

 $P = 2(w) + 2(2w - 4)$
 $P = 2w + 4w - 8$
 $P = 6w - 8$
 $A = w(2w - 4)$

Perimeter: $6w - 8$
 Area: $2w^2 - 4w$

10. The perimeter of a square is

$\frac{40x^4}{4} + \frac{16x^2}{4}$. Find the area.



side = $10x^4 + 4x^2$

$(10x^4 + 4x^2)(10x^4 + 4x^2)$

$A = 100x^8 + 80x^6 + 16x^4$

11. One side of a square is $(-3n + 7)$. What is its perimeter?

$4(-3n + 7)$
 $-12n + 28$

12. The perimeter of a square is $(4x - 44)$. What is the length of each side?

$\frac{4x - 44}{4}$
 $x - 11$

13. The quantity $4x^2 - 3x + 8$ is subtracted from $x^2 - 2x + 11$. Simplify.

$x^2 - 2x + 11 + (-4x^2 + 3x - 8)$
 $-3x^2 + x + 3$

14. NASA engineers are designing a mirror that will be attached to a satellite. The mirror will be the shape of a polygon with 4 sides. The lengths of 3 of the sides are $2x + 5$, $6x - 7$, and $x - 4$. The perimeter of the mirror must be $12x + 12$. What does the length of the 4th side need to be?

$(2x + 5) + (6x - 7) + (x - 4) + \square = 12x + 12$

$9x - 6 + \square = 12x + 12$

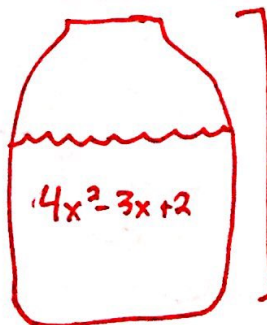
$3x + 18$

15. One side of a triangle has a length of $8m^2 - 6m - 14$. Another side has a length of $25 - 3m$. The last side has a length of $1 - m - m^2$. What is the perimeter, in terms of m , of the triangle?

$(8m^2 - 6m - 14) + (25 - 3m) + (1 - m - m^2)$

$7m^2 - 10m + 12$

16. An empty jar has a volume of $8x^2 + 2x - 4$ cubic inches. Josh pours $4x^2 - 3x + 2$ cubic inches of water into the jar. How many more cubic inches of water could the jar still hold?



$(8x^2 + 2x - 4) - (4x^2 - 3x + 2)$
 $(8x^2 + 2x - 4) + (-4x^2 + 3x - 2)$

$4x^2 + 5x - 6$
 more