

Class Notes

Polynomials P3

Multiplying with Exponents

Explore

Name KEY
Date _____ Period _____

- Using the smallest algebra tiles, create as many different-sized squares as you can. In the table below, record the side lengths and areas of the squares you created.

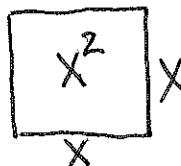
Length	Process	Area
1	1·1	1
2	2·2	4
3	3·3	9
4	4·4	16

Create an algebraic rule to find the area of a square with a side length of n .

$$\text{Area} = n^2 \quad \text{if } y = \text{area}$$

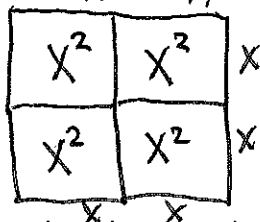
$$y = n^2$$

- Trace a large square from the algebra tile set and label each side x . Write two different, yet equivalent, expressions to describe the area.



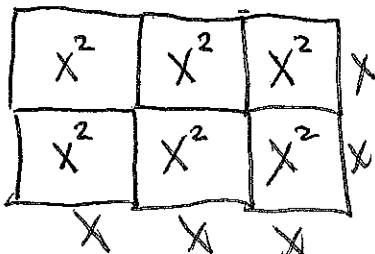
Area: 1) $x \cdot x$ 2) x^2
 $(x)(x)$

- Use the tiles to make a larger square with a side length of $2x$. Sketch and label the square. Write three different, yet equivalent, expressions to describe the area.



1) $(x+x)(x+x)$
 2) $(2x)(2x)$
 3) $(2x)^2$ Also: $4x^2, x^2+x^2+x^2+x^2$

- Use the tiles to make a rectangle with side lengths of $2x$ and $3x$. Sketch and label the rectangle. Write two different, yet equivalent, expressions to describe the area.



1) $(3x)(2x)$ Also: $(x+x+x)(x+x)$
 2) $6x^2$ $x^2+x^2+x^2+x^2+x^2+x^2$

6. Complete the table.

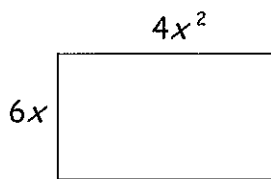
	Products	Expanded Form	Simplest Form
A	$a^3 \cdot a^5$	$(a \cdot a \cdot a) \cdot (a \cdot a \cdot a \cdot a \cdot a)$	a^8
B	$c^2(c^4)$	$(c \cdot c) \cdot (c \cdot c \cdot c \cdot c)$	c^6
C	$c^2d^3 \cdot c^4d$	$(c \cdot c) \cdot (d \cdot d \cdot d) \cdot (c \cdot c \cdot c \cdot c \cdot d)$	c^6d^4
D	$-5m^2 \cdot 2m^5$	$(-5 \cdot m \cdot m) \cdot (2 \cdot m \cdot m \cdot m \cdot m \cdot m) =$ $(-5 \cdot 2) \cdot (m \cdot m \cdot m \cdot m \cdot m \cdot m)$	$-10m^7$
E	$6jk \cdot j^3k^2$	$(6 \cdot j \cdot k) \cdot (j \cdot j \cdot j \cdot k \cdot k) =$ $(6 \cdot 1) \cdot (j \cdot j \cdot j \cdot j) \cdot (k \cdot k \cdot k)$	$6j^4k^3$
F	$(-8g^4h^2)(-5g^2)$	$(-8 \cdot g \cdot g \cdot g \cdot g \cdot h \cdot h)(-5 \cdot g \cdot g) =$ $(-8 \cdot -5)(g \cdot g \cdot g \cdot g \cdot g \cdot g)(h \cdot h)$	$40g^6h^2$

7. Compare the simplest form column to the products column. Describe a way to find the coefficients and the exponents in simplest form without using expanded form.

Coefficients: multiply the numbers

Exponents: Add the exponents for bases that are the same

8. Predict the area of the given rectangle.

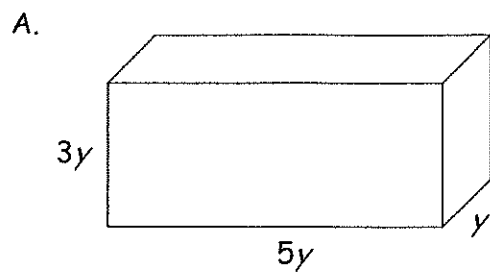


$$A = lw$$

$$A = (4x^2)(6x)$$

$$A = 24x^3 \text{ sq. units}$$

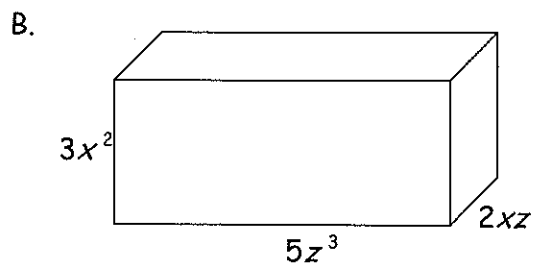
9. Find the volume of the given rectangular prisms.



$$V = lwh$$

$$V = (5y)(y)(3y)$$

$$V = 15y^3 \text{ cubic units}$$



$$V = lwh$$

$$V = (5z^3)(2xz)(3x^2)$$

$$V = 30x^3z^4 \text{ cubic units}$$