Review - Algebra tile values:

Multiplication & Division Rules

$\oplus$ x $\oplus$ = $\oplus$ $\ominus$ x $\oplus$ = $\ominus$

$\ominus$ x $\ominus$ = $\oplus$ $\oplus$ x $\ominus$ = $\ominus$
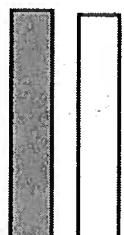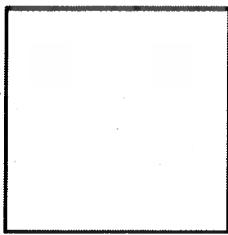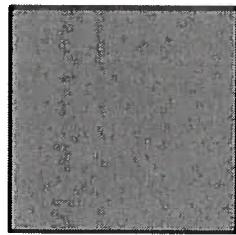
$(2x)(3x) =$ $(2x)(-x + 4) =$
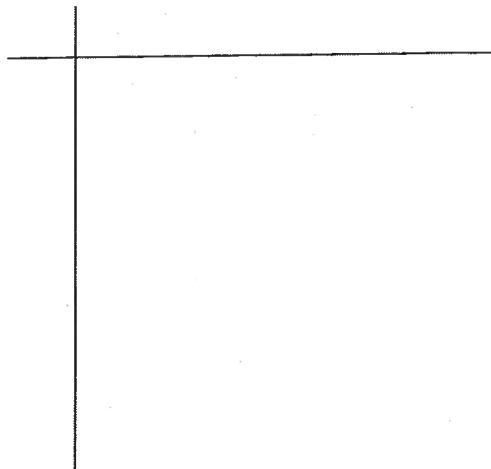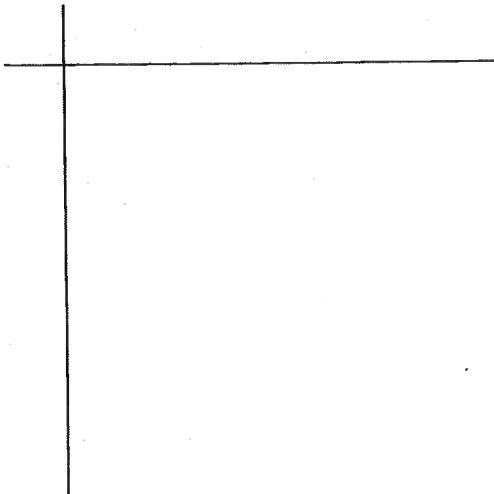
$(x + 1)(x - 3) =$
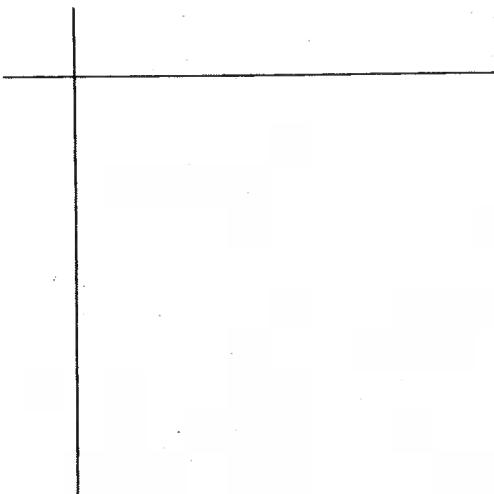
Product – answer when multiplying

$2 \times 3 = 6$

Quotient – answer when dividing

$6 \div 3 = 2$

Multiplication & Division Rules

$\oplus \times \oplus = \oplus$ $\ominus \times \oplus = \ominus$

$\ominus \times \ominus = \oplus$ $\oplus \times \ominus = \ominus$

$(-x)(-2x) =$

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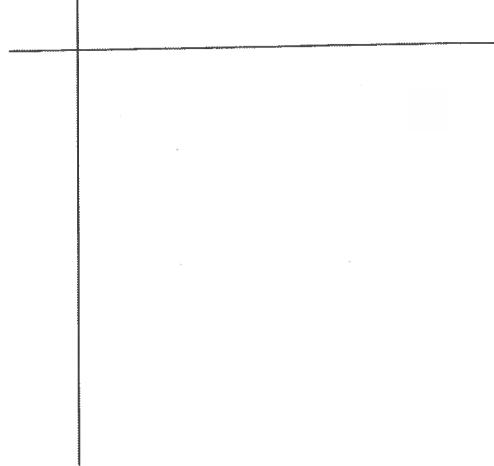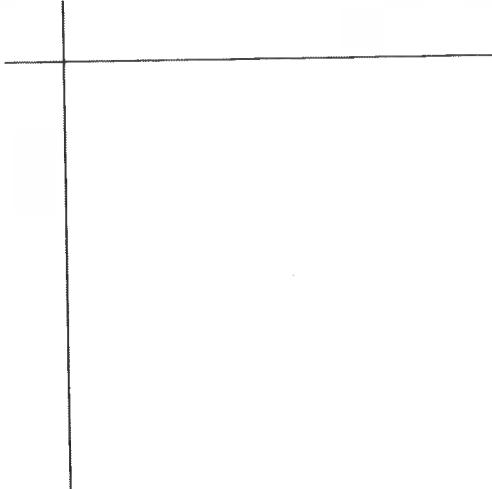
$(-3x)(x + 3) =$

Make your own: (   )(   ) =
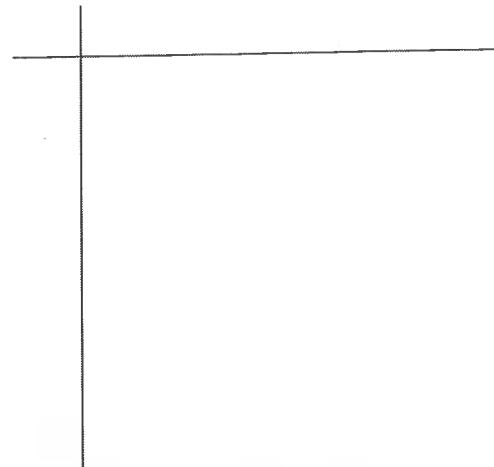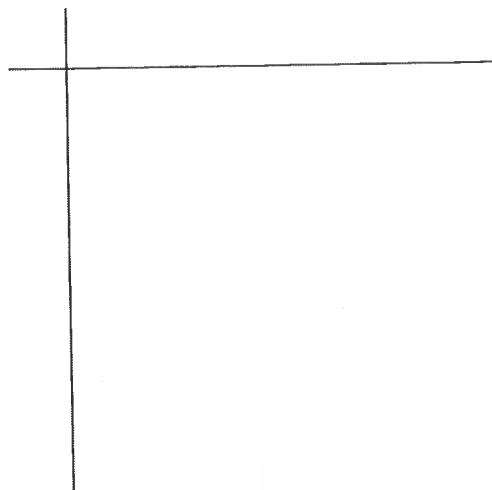
7.2 Warm Up

1. Write the multiplication statement for each model.

a)

b)

_____
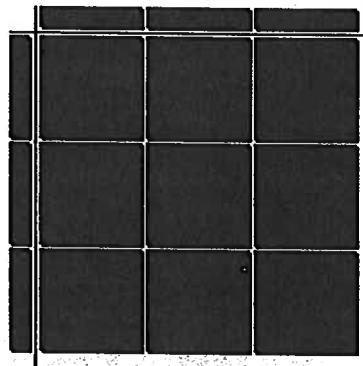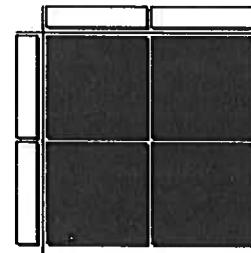
$(\underline{\quad\quad} x)(\underline{\quad\quad}) = \underline{\quad\quad} x^2$

2. Draw a model for each multiplication expression. Then, write the product.

a) $(5x)(2x)$

b) $(-3x)(-2x)$

☐ Draw 2 positive x-tiles on the left side.
☐ Draw 5 positive x-tiles on the top.
☐ Complete the rectangle with positive x^2-tiles.

So, $(5x)(2x) = \underline{\quad\quad}$

d)

_____
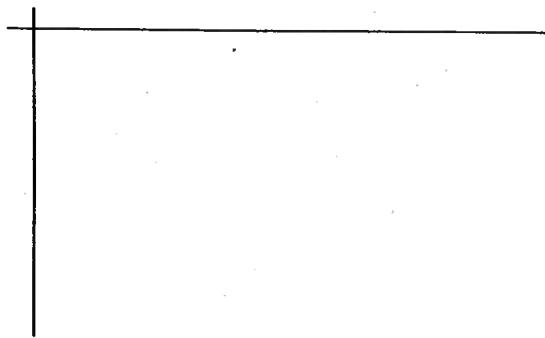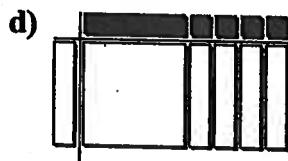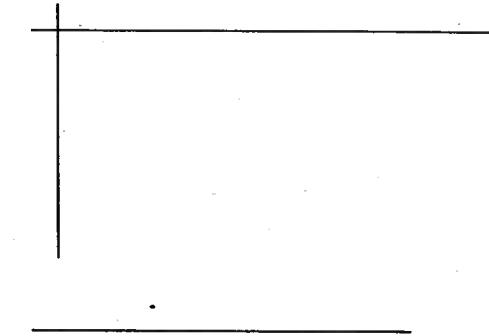
5. Write the multiplication statement for the models.

a)

b)

_____

$(\underline{\quad\quad} x)(\underline{\quad\quad} x + \underline{\quad\quad})$

2
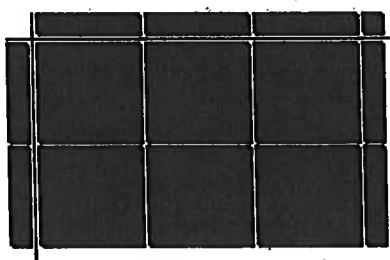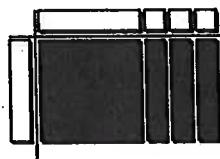
Dividing Polynomials

Watch: https://www.youtube.com/watch?v=GrJdSkT88qc&t=211s
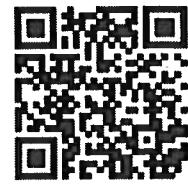
$(12x^2) \div (3x) =$

$\dfrac{(8x^2 - 2x) =}{(2x)}$
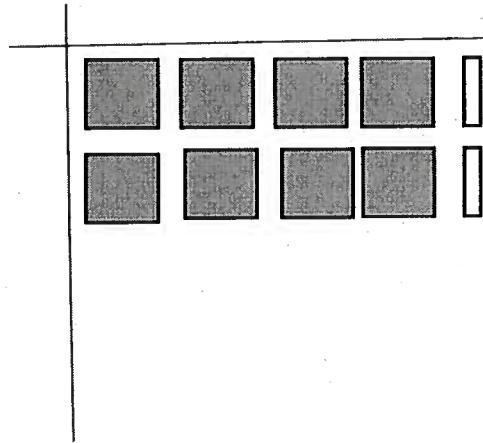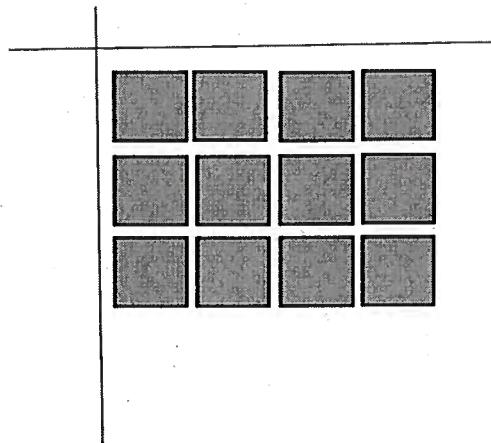
Write a division or multiplication statement for the following:
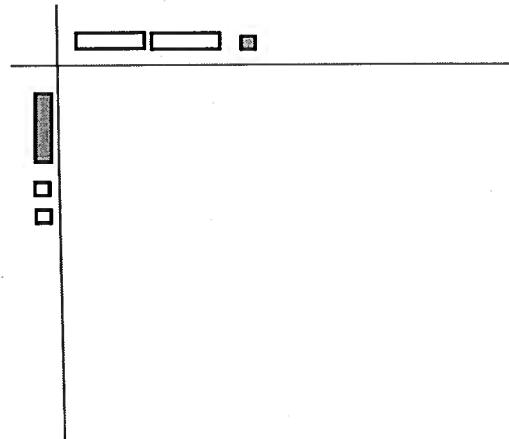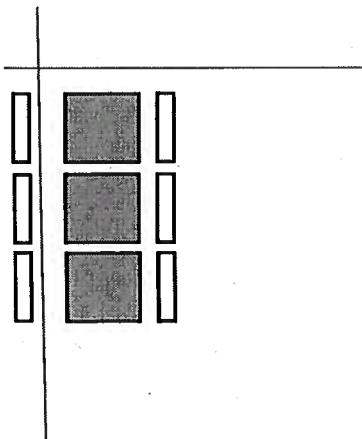
7. Write a division statement for each set of tiles.

a)

$$\frac{6x^2}{\boxed{} x} = \underline{}$$

b)

$$\frac{\boxed{}}{\boxed{}} = \underline{}$$

c)

$$\frac{\boxed{}}{\boxed{}} = \underline{}$$

d)

$$\frac{\boxed{}}{\boxed{}} = \underline{}$$
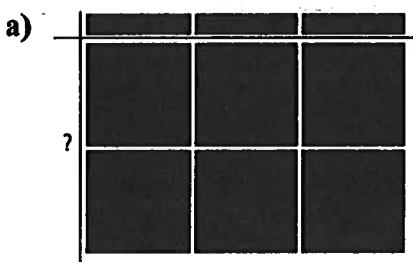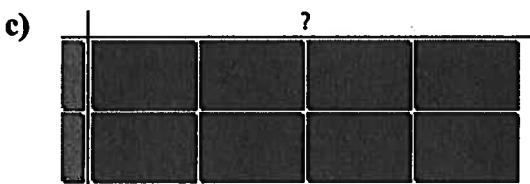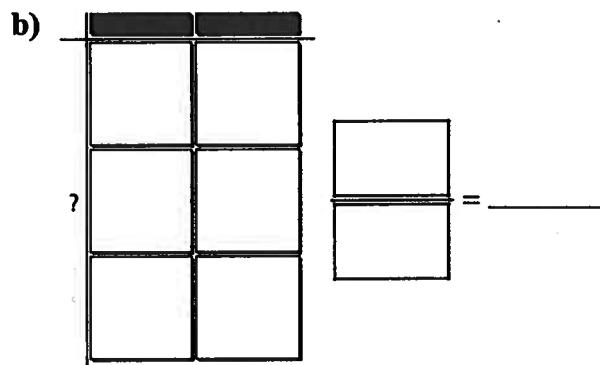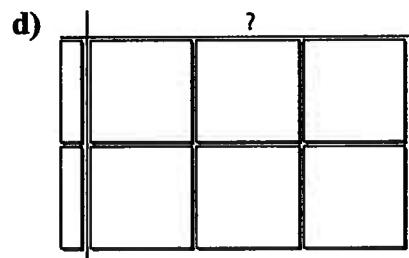
8. Model and complete each division statement.

a) $\dfrac{8x^2}{2x}$

- ☐ Draw 2 positive x-tiles on the left side.
- ☐ Draw 8 positive x^2-tiles arranged in 2 rows.
- ☐ Find the unknown side.
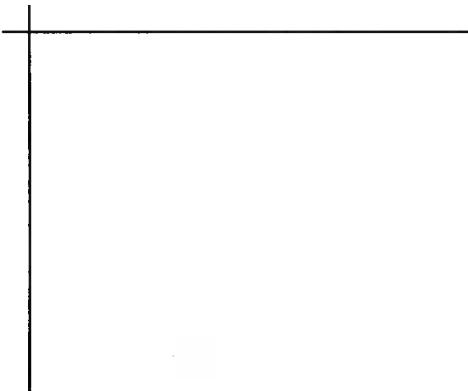
$$\frac{8x^2}{2x} = \underline{} x$$
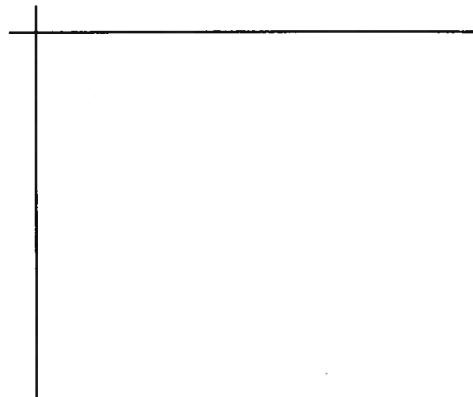
b) $\dfrac{-9x^2}{-3x}$

$$\frac{-9x^2}{-3x} = \underline{}$$

Name: _____ Date: _____

7.3 Warm Up

1. Write a division statement for each set of algebra tiles.

a)

_____ $x^2 \div$ _____ $x =$ _____ x

b)

_____

c)

_____

d)

_____
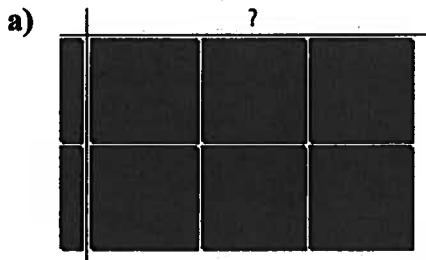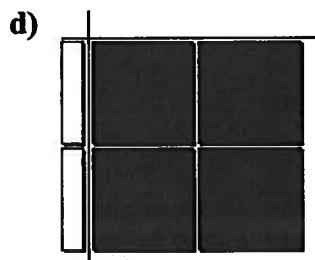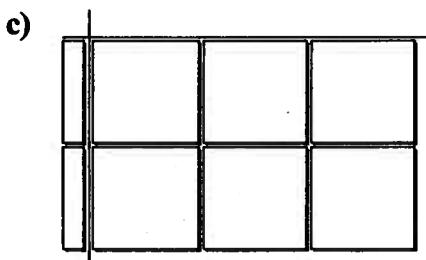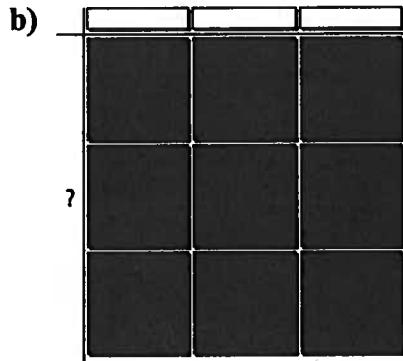
2. Model and complete each division statement.

a) $\dfrac{6x^2}{2x} =$ _____ x
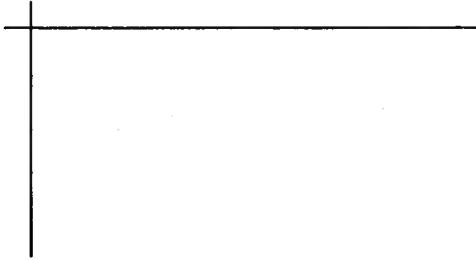
b) $\dfrac{-12x^2}{4x} =$ _____
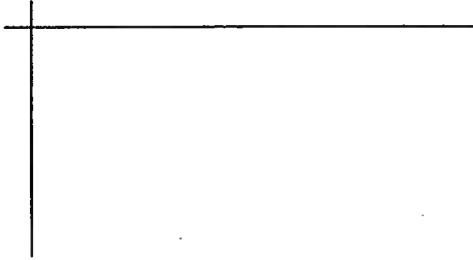
3. Find the quotient.

a) $\dfrac{35,x^2}{-7x}$

Math 9 Notes - LG 6
Multiplying & Dividing Polynomials Using Algebra
Watch: https://www.youtube.com/watch?v=7CaN9Ro0ABs&t=7s

1. Multiply or divide coefficients
2. Multiply or divide variables

$(7x)(10x) =$ $(2y)(8y) =$

$(5x)(4xy) =$ $2(4x)(6x) =$

Using the distributive property:

$(4x)(2x + 1) =$ $(-2y)(3y - 5) =$

Dividing:

$\dfrac{12x^2}{4x}$ $\dfrac{72xy}{9y}$ $\dfrac{40x^3y^2z}{5xyz}$

$\dfrac{25x^2 + 15x}{5x}$ $\dfrac{12xy + 6x^2y}{3x}$

Name: _____ Date: _____

7.1 Warm Up

1. Write each expression as a single power. Use exponent laws.

   a) $2^3 \times 2^4$

   $= 2^{3+4}$

   $= 2^{\square}$

   b) $5^2 \times 5$

   c) $4^4 \times 4^4$

   d) $10^2 \times 10^3$

2. Write each expression as a single power. Use exponent laws.

   Exponent laws:
   $a^m \times a^n = a^{m+n}$ $a^m \div a^n = a^{m-n}$
   $(a^m)^n = a^{mn}$ $(a \times b)^m = a^m \times b^m$
   $\left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}$ $a^0 = 1, a \neq 0$

   a) $2^5 \div 2^3$

   $= 2^{5-3}$

   $= 2^{\square}$

   b) $4^4 \div 4^4$

   c) $\dfrac{5^6}{5^3}$

   d) $\dfrac{7^5}{7}$

M E 3. Divide.

   $\oplus \div \oplus = \oplus$ $\ominus \div \ominus = \oplus$
   $\oplus \div \ominus = \ominus$ $\ominus \div \oplus = \ominus$

   a) $\dfrac{18}{3} = $ _____

   b) $\dfrac{-20}{5} = $ _____

   c) $\dfrac{21}{-7} = $ _____

   d) $\dfrac{-36}{-9} = $ _____

4. Multiply.

   $\oplus \times \oplus = \oplus$ $\ominus \times \ominus = \oplus$
   $\oplus \times \ominus = \ominus$ $\ominus \times \oplus = \ominus$

   a) $(-3)(10) = $ _____

   b) $(6)(7) = $ _____

   c) $(-5)(-8) = $ _____

   d) $(9)(-4) = $ _____

Name: _____ Date: _____

6. Divide.

a) $\dfrac{2y^2 + 4y}{2y}$

$= \dfrac{2y^2}{2y} + \dfrac{4y}{2y}$

$= y + _____$

b) $\dfrac{-18y^2 - 6y}{-6y}$

c) $\dfrac{2x^2 + 8xy}{x}$

d) $\dfrac{2.7c^2 + 3c}{3c}$

Apply

7. A rectangle has an area of $9x^2 - 3x$ square units.
The length of the rectangle is $3x$ units.
What is the width?

$\text{width} = \dfrac{\text{area}}{\text{length}}$

? $9x^2 - 3x$

$3x$
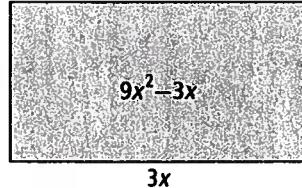
Sentence: _____

8. The grade 9 students want to decorate the gym wall for a dance.
The expression $45x^2 + 20x$ represents the area of the wall.
The expression $5x$ represents the area covered by 1 sheet of poster paper.
What expression represents the number of sheets of poster paper that will cover the wall?

Draw a diagram to help you.

Sentence: _____

Chapter 7 Review

Key Words
For #1 to #6, write the number of the polynomial in Column A beside the equivalent polynomial in Column B.

Column A   **Column B**

1. $\dfrac{8xy}{2x}$ _____ $4xy - 2x$

2. $\dfrac{12x^2 - 6x}{3x}$ _____ $4x^2 - 2x$

3. $(-2x)(-2x + 1)$ _____ $4y$

4. $\dfrac{12xy - 6x}{3}$ _____ $2x^2 - 2x$

5. $\dfrac{8xy}{2}$ _____ $4xy$

6. $\dfrac{12x^2 - 12x}{6}$ _____ $4x - 2$

7.1 Multiplying and Dividing Monomials, pages 367–377

7. Draw a model to complete the multiplication statement.

   a) $(2x)(4x)$ **b)** $(-3x)(3x)$

   ☐ Draw 2 positive x-tiles on the top.
   ☐ Draw 4 positive x-tiles on the side.
   ☐ Complete the rectangle with x^2-tiles.
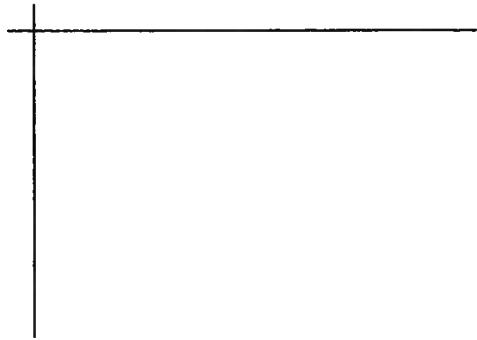
   $(-3x)(3x) = $ _____
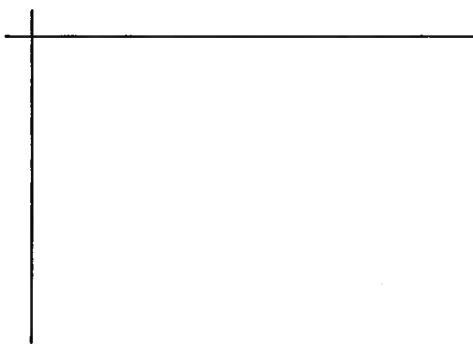
   $(2x)(4x) = $ _____

8. Find each product.

   a) $(-8x)(11x)$

   b) $(1.1x)(5x)$

9. Draw a model to complete the division statement.

   a) $\dfrac{6x^2}{2x}$

   b) $\dfrac{-8x^2}{4x}$

   ❑ Draw 2 positive x-tiles on the left side.
   ❑ Arrange 6 positive x^2-tiles in 2 rows.
   ❑ Find the unknown side.
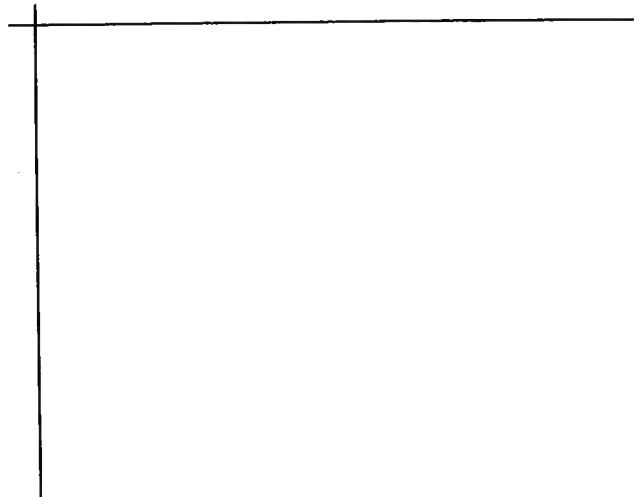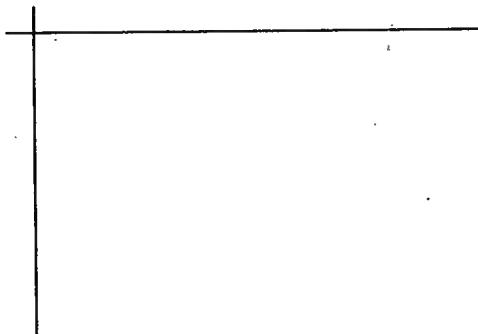
   $\dfrac{6x^2}{2x} =$ _____

   $\dfrac{-8x^2}{4x} =$ _____

10. Find each quotient.

   a) $\dfrac{2xy}{2x}$

   b) $\dfrac{-4.2r^2}{-2r}$

Math 9 Notes - LG 6
Applying the Concepts
Watch: https://www.youtube.com/watch?v=QtnIbGq1opw
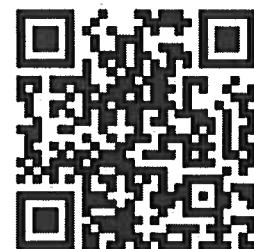
1. Find the missing length of the rectangle.

$35x^2$ 5x
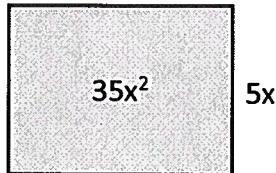
2. Find the area of the triangle.

6x

10x
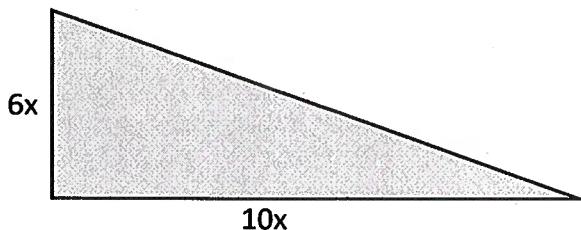
3. Write an expression for the area of the rectangle.

3x

8x + 2
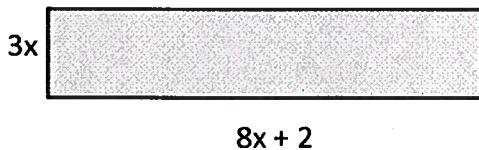
4. Find the volume of the rectangular prism.

5x

10x

4x
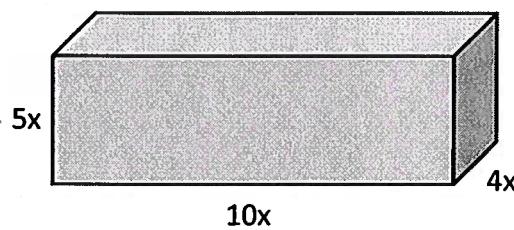
Name: _____ Date: _____

Apply

8. A rectangular blanket has a width of $3x$ and a length of $4x - 3$.

**a)** Write an expanded expression for the area of the blanket.

> Area = length × width

$3x$

$4x - 3$
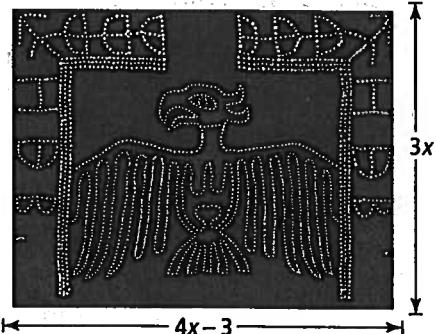
b) Write a simplified expression for the perimeter of the blanket.

Perimeter = (2 × length) + (2 × width)

10. Write an expression for the area of each figure.
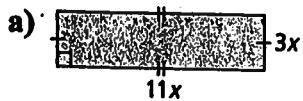
> Area of a triangle = $b × h ÷ 2$

a)

$3x$

$11x$

b)

$4p$

$10p$

The expression is _____.

11. Find the missing dimension in each figure.

a)

$5x$

?

Width = $\dfrac{\text{area}}{\text{length}}$

b)

$1.1w$ $A = 3.3w^2$

?

Base = $2 × \dfrac{\text{area}}{\text{height}}$