7.1 Multiplying and Dividing Monomials

Warm Up:

"**Monomial**" = *one term* expression (ex: 2x, -3m, $14y^2$, $6x^3y$)

"**Product**" = *multiplication* ; "**Quotient**" = *division*

Perform the calculations:

a) $(x)(x) =$ b) $(x)(y) =$ c) $(3)(-4) =$ d) $(-3)(-4) =$ e) $(3)(4) =$ f) $(-0.2)(4) =$

1. Determine each product.

a) $(-3x)(-2x) =$ **b)** $(x)(4x) =$ **c)** $(-4x)(2x) =$ **d)** $(3y)(7y) =$

3. Determine each quotient.

a) $\frac{8x^2}{4x}$ **b)** $\frac{6xy}{3y}$ c) $\frac{16x^2}{-8x} =$ d) $\frac{25x^6yz^4}{5x^2yz} =$

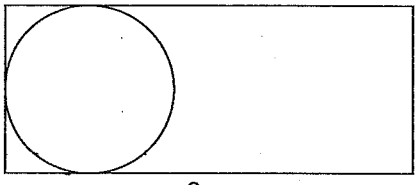
4. Determine the quotient of each pair of monomials.

a) $\frac{15xy}{3y} =$ **b)** $\frac{-9mn}{-3mn} =$ **c)** $\frac{12xy}{8x} =$ **d)** $\frac{-14.2m^2}{2m}$

5. A triangle has a base of **12*x*** cm and a height of **3.4*x*** cm. What is the **area** of the triangle?

6. The area of a rectangle is **$25.6x^2$** m^2. Determine the height if the base is **8*x*** m.

7. Marko's rectangular lawn has an area of **36*x*** m^2. The length of the lawn is 9 m. Marko wants to add a circular cement patio. What is the area of the largest circular patio that he could add?



8. Four students were asked to determine the quotient of the expression $\frac{16x^2}{4x}$. Which student showed a correct partial solution?

A Amir: $(16 \div 4) + (x^2 \div x)$ **B** Brendan: $(16 \div 4) \div (x^2 \div x)$

C Christina: $(16 - 4) \div (x^2 - x)$ **D** Dana: $(16 \div 4) \times (x^2 \div x)$

9. The product $(-3.7x)(5.1y)$, in simplified form, is ____.

10. The quotient $10x^2 \div 4x$, in simplified decimal form, is ____.

7.2 Multiplying Polynomials by Monomials

1. Use algebra tiles to expand each expression.

a) $(4x + 1)(2x)$ **b)** $(-x)(x + 4)$

c) $(2x)(3x - 1)$

2. Use the distributive property to expand each expression.

a) $(5m)(2m + 3)$ **b)** $(-n)(n + 1)$ **c)** $(1.3x)(2x - 5)$

d) $(-m + 2)(3m)$ **e)** $(4.1k - 5.3)(-3k)$

3. Which of the equations best shows the use of the distributive property?

A $3(4x + 2x) = 3(6x)$ **B** $5(2 - 3x) = 5(-3x + 2)$

C $2(-x + 4) = (-x + 4)2$ **D** $4(2x - 7) = (4)(2x) + (4)(-7)$

4. Sergio wanted to determine $5x(7x - 2)$. His solution is shown below.

$(5x)(7x) + (5x)(-2)$ Step 1

$= (5)(7)(x)(x) + (5)(-2)(x)(-2)$ Step 2

$= 35x^2 - 10(-2x)$ Step 3

$= x\ 35x^2 + 20x$ Step 4

Sergio discovered an error in his solution. In which step did Sergio make the error? Show the correct solution.

5. Multiply.

a) $(4m + 1)(3m) =$ **b)** $(2x - 3)(-4x) =$ **c)** $(4.2n)(2n - 7) =$

d) $\left(\frac{2}{3}m + 4\right)(-9m) =$ **e)** $\left(\frac{-4}{3}x\right)(6x - 12) =$

4. The *length* of a cement pad on a playground is **3 m longer** than the *width*. The width is **5*x*** m.

a) Write an expression for the *area* of the cement pad.

b) If $x = 2$ m, what is the *area* of the cement pad?