Multiplying & Dividing Monomials Review

December-11-17
10:00 AM

Mathematics 9
Polynomials
Multiplying & Dividing Monomials Review

A. Definitions

1. **term:** a number and variable combined or a constant value.

$6x^2$, $-7y$, -9

2. **monomial:** an algebra expression with one term.

$6x^2$, $-7y$, -9

B. Examples

1. Multiply the following monomials.

a) $(7a)(3a)$

$= 21a^{1+1}$

$= \boxed{21a^2}$

b) $(-6x^4)(4x^2)$

$= -24x^{4+2}$

$= \boxed{-24x^6}$

c) $(-5n)(-5m^2p^3)$

$= \boxed{25mnp^3}$

d) $\left(\frac{4}{5}x^6y^2\right)(15x^3y^5)$

$= 12x^{6+3}y^{2+5}$

$= \boxed{12x^9y^7}$

4 → 3
4 15 :5
5 :5 1
1 → 1

e) $(-4x^2y)(2x)(-3x^2y)$

$= 24x^{2+1+2}y^{1+1}$

$= \boxed{24x^5y^2}$

f) $(6m^3np^2)(-2n^2p)(4m^2p^2)$

$= -48m^{3+2}n^{1+2}p^{2+1+2}$

$= \boxed{-48m^5n^3p^5}$

3. Divide the following monomials.

a) $\frac{35x^5}{7x^2}$

$= 5x^{5-2}$

$= \boxed{5x^3}$

b) $\frac{-24m^5n^3}{-6mn^3}$

$= 4m^{5-1}n^{3-3}$

$= 4m^4n^0$

$= 4m^4(1) = \boxed{4m^4}$

c) $\left(-28x^7y^2\right)\div\left(4x^3\right)$

$= -7x^{7-3}y^2$

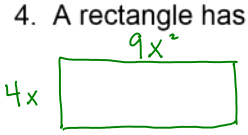
$= \boxed{-7x^4y^2}$

d) $\left(45m^6n^4p^5\right)\div\left(-5m^2p^3\right)$

$= -9m^{6-2}n^4p^{5-3}$

$= \boxed{-9m^4n^4p^2}$

4. A rectangle has a length of $9x^2$ and a width of $4x$. What is the area of the rectangle?



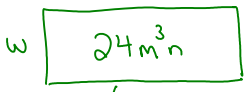
$A = lw$

$= (9x^2)(4x)$

$= 36x^{2+1}$

$= \boxed{36x^3}$

5. The area of a rectangle is $24m^3n$. If the length of the rectangle is $6mn$, what is the expression to represent the width?



$A = lw$

$\frac{24m^3n}{6mn} = \frac{(6mn)w}{6mn}$

$w = 4m^{3-1}n^{1-1}$

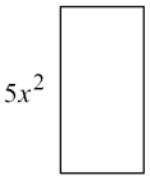
$= 4m^2n^0$

$= 4m^2(1)$

$= \boxed{4m^2}$

6. Write an expression to represent the area of the following shapes.

a)



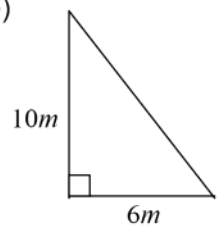
$A = lw$

$= (5x^2)(2xy)$

$= 10x^{2+1}y$

$= \boxed{10x^3y}$

b)



$A = \frac{bh}{2}$

$= \frac{(6m)(10m)}{2}$

$= \frac{60m^{1+1}}{2}$

$= \frac{60m^2}{2}$

$= \boxed{30m^2}$

Assignment: Multiplying & Dividing Monomials Review Assignment

Name:_____

Multiplying & Dividing Monomials Review Assignment

1. Multiply the following.

a) $(3x)(5x)$

b) $(-4x^2)(-2x^3)$

c) $(6xy)(-3yz)$

d) $(9y^2)(3x^2)$

e) $(2y^2z)(-yz)$

f) $(2xy)(2x^2y)$

g) $(-3x^4)(10x^8y)$

h) $(-3pq)(2p^3q)$

i) $(2abc)(-3bc)(4ac)$

j) $(3x^2y)(-3xy^3)(2x^2y^2z)$

2. Divide the following.

a) $\frac{12x^2}{6x}$

b) $\frac{-28x^4}{7x^2}$

c) $\left(-16m^5\right) \div \left(-4m\right)$

d) $\frac{-10x^4y^2}{-5xy}$

e) $12a^2b^2c^2 \div -3ab$

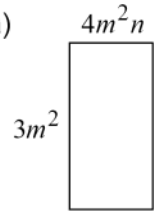
f) $-8ab^2c \div -4abc$

g) $\frac{-28m^5n^2p^3}{7m^2n^2p^2}$

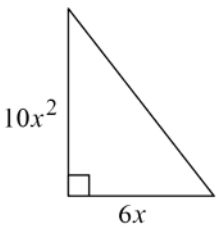
h) $\frac{-28x^7y^3z^4}{-4x^3yz^2}$

3. Write and expression to represent the area of the following shapes.

a)



b)



Answers

1. a) $15x^2$ b) $8x^5$

   c) $-18xy^2z$ d) $27x^2y^2$

   e) $-2y^3z^2$ f) $4x^3y^2$

   g) $-30x^{12}y$ h) $-6p^4q^2$

   i) $-24a^2b^2c^3$ j) $-18x^5y^6z$

2. a) $2x$ b) $-4x^2$

   c) $4m^4$ d) $2x^3y$

   e) $-3abc^2$ f) $2b$

   g) $-4m^3p$ h) $7x^4y^2z^2$

3. a) $12m^4n$ b) $30x^3$