

Polynomials Practice Test

Extra Suggested Practice

Section 5.5 - #2-3all, 4-9half

1. For each polynomial, answer the following questions:
- | | 2 1 0 | degree | 4 2 3 0 |
|---|---|---|--|
| $5xy - y - 4$
<div style="margin-left: 100px;">3</div> | $\underline{\quad}$
$\underline{\quad}$
$\underline{\quad}$ | $\underline{\quad}$
$\underline{\quad}$
$\underline{\quad}$ | $10a^2b^2 + bd + 2^2c^3 - 1$
<div style="margin-left: 100px;">4</div> |
| a) How many terms are in the polynomial? | x, y | -4 | a, b, c, d |
| b) What are the variables in the polynomial? | 5, -1 | 10, 4, 1 | -1 |
| c) What are the constants in the polynomial? | 2 | 4 | 4 |
| d) What are the coefficients in the polynomial? | | | |
| e) What is the degree of the polynomial? | | | |

2. Explain why $4x^2y$ and $-3y^2x$ are **not** like terms

They have the same exponents (2, 1) but the exponent of 2 is on x in the first term and on y in the second term so the variables and exponents don't match

3. Draw the polynomial using algebra tiles. Simplify with tiles. Write out the answer using variables

$3x^2 - x - 2x^2 - 3 + 4x - 4$

$\Rightarrow x^2 + 3x - 7$

4. Draw algebra tiles to multiply the following. Write your final answer using variables.

a. $2x(2x - 1)$

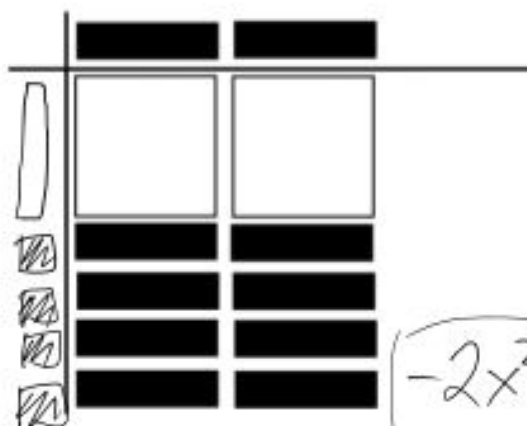
b. $-3x(-x + 2)$

$4x^2 - 2x$

$3x^2 - 6x$

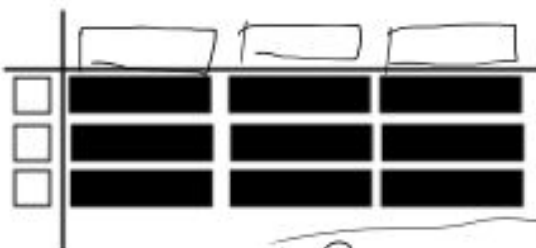
5. Complete the algebra tile divisions shown below. Write the question and answer using variables

a.



$$\frac{-2x^2 + 8x}{2x} = -x + 4$$

b.



$$\frac{9x}{-3} = -3x$$

6. Add and subtract the polynomials. Simplify completely.

a. $-6x^2 + 2x - 5x^2 - 3 - 4x + 1$

$$= -11x^2 - 2x - 2$$

d. $(5b - 3) + (-3b + 2)$

$$= 2b - 1$$

b. $(4a^2 + 4a - 1) + (-3a - 2a^2 + 3)$

$$= 2a^2 + a + 2$$

e. $(2x^2 + 8) - (5x^2 - 2)$

$$= 2x^2 + 8 - 5x^2 + 2$$

$$= -3x^2 + 10$$

c. $(5x - 6y + 2xy) - (3xy + 8x - 2y)$

$$= 5x - 6y + 2xy - 3xy - 8x + 2y$$

$$= -3x - 4y - xy$$

f. $(-5x^2 + 4x) + (8 - 3x^2 - 2x) - (-8x^2 - 6)$

$$= -5x^2 + 4x + 8 - 3x^2 - 2x + 8x^2 + 6$$

$$= 2x + 14$$

7. Multiply the polynomials. Simplify completely.

a. $(-4a^3b)(8b^4)$

$$= -32a^3b^5$$

d. $-3(2y - 1)$

$$= -6y + 3$$

b. $t^2(-3t + 6)$

$$= -3t^3 + 6t^2$$

e. $-2x(-5x^4 - x^2 + 2)$

$$= 10x^5 + 2x^3 - 4x$$

c. $-4y^2(4 - xy + 5y)$

$$= -16y^2 + 4xy^3 - 20y^3$$

f. $-a^2b(2a^3 - 8ab^2)$

$$= -2a^5b + 8a^3b^3$$

8. Divide the following polynomials. Simplify completely.

a. $\frac{-12a^5}{4a^2}$

$= -3a^3$

b. $\frac{18p^7q^6}{p^2q}$

$= 18p^5q^5$

c. $\frac{6xyz-12xz}{6xz}$

$= y-2$

d. $\frac{14y^3+21y}{-7y}$

$= -2y^2-3$

e. $\frac{16x^4-8x^3+4x^2}{4x^2}$

$= 4x^2-2x+1$

f. $\frac{15x^3y-20x^2+25xy^2}{-5x}$

$= -3x^2y+4x-5y^2$

9. Simplify completely.

a. $4(3x^2-2x-5)-3x(-2x+1)$

$= 12x^2-8x-20-6x^2-3x$

$= 6x^2-11x-20$

b. $\frac{-15x^3+5x^2}{5x}-3x(1-2x^2-x)$

$= -3x^2+x-3x+6x^3+3x^2$

$= 6x^3-2x$

c. $\frac{12x^2-6x}{3x}-\frac{8x^2-4x}{4}$

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

$= 4x-2-2x^2+x$

$= -2x^2+5x-2$

d. $2y(3x-5+2y)+\frac{4y^2-4xy+6}{-2}$

$= 6xy-10y+4y^2-2y^2+2xy-3$

$= 8xy+2y^2-10y-3$

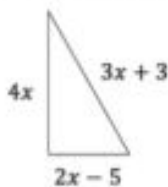
10. Explain all the errors, then write the correct solution

$\frac{15x^3-30x^2+5x}{5x} = 3x + 6x + x = 3x^2-6x+1$

Annotations:
 - Red arrow pointing to $3x$: "Should be x^2 "
 - Blue arrow pointing to $6x$: "Should be negative"
 - Purple arrow pointing to x : "Should be 1"

11. For the triangle below:

- a. Find the perimeter
b. Find the area



a) $(3x+3) + (2x-5) + (4x)$ b) $A = \frac{1}{2}bh$

$= \boxed{9x-2}$

$= \frac{1}{2}(4x)(2x-5)$

$= 2x(2x-5)$

$= \boxed{4x^2 - 10x}$

12. Find the length of a rectangle that has an area of $30x^3 - 12x$ and a width of $3x$. (Hint: Draw a picture)

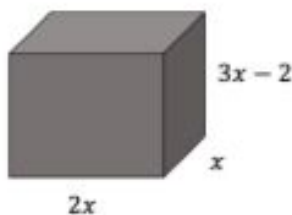


Area = $30x^3 - 12x$

$L = \frac{30x^3 - 12x}{3x} = \boxed{10x^2 - 4}$

13. For the shape below:

- a. Find the volume
b. Find the surface area

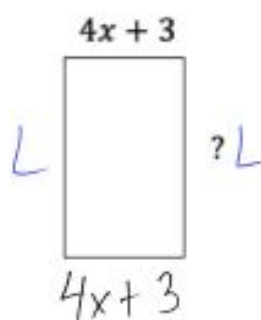


a) $V = (2x)(x)(3x-2) = 2x^2(3x-2)$
 $= \boxed{6x^3 - 4x^2}$

b) $2(2x)(x) + 2(2x)(3x-2) + 2(x)(3x-2)$
 $= (4x^2) + (12x^2 - 8x) + (6x^2 - 4x)$
 $= \boxed{22x^2 - 12x}$

14. The perimeter of the rectangle below is $26x + 6$.

- a. Find the length of the rectangle (the missing side)
b. Find the area of the rectangle



a) $2L = 26x + 6 - 2(4x + 3)$
 $= 26x + 6 - 8x - 6$

$2L = 18x \Rightarrow \boxed{L = 9x}$

b) Area = $(9x)(4x + 3) = \boxed{36x^2 + 27x}$