9th Grade Assignment – Week #9

Test!!

- Next week's assignment will include the test on the *Exponents & Polynomials* unit. The test may include questions similar to or related to any of the problems that appeared on the sheets in the workbook.

Individual Work

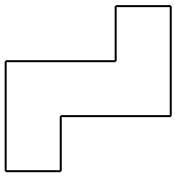
- In preparation for the test, you should work through the problems on **Problem Sets #10 and #11** (*Exponents & Polynomials* unit). You should focus on the problems which you need to practice the most. Write down your questions and bring them to the tutorial session on Friday.

Group Assignment: Puzzles! (for Tuesday and Thursday)

1. Sara made a batch of cookies. She gave one-quarter of the batch to Kevin, one-fifth to Katie, and one-sixth to Mike. If those three were given a total of 74 cookies, how many cookies were in the original batch?

2. The Snail's Journey. A snail crawled up the outside of a cylindrical water tower, which is 70 feet tall and has a circumference of 24 feet. However, in order to make his journey easier, he crawled up at a slight (but constant) incline such that by the time he made it to the top, he had circled the water tower exactly 7 times. How far did he actually travel?

3. Making a Square. The figure shown on the right has only right angles, and each edge has a length of either 1 inch or 2 inches. How can you make two straight cuts such that the three resulting pieces can be arranged to form one square?



Problem Set #10

Section A

Simplify.

1) $-a^2 + b^2 + 5a^2 - 3b^2$
2) $a^3b^2 - b^2 - 5a^3b^2 + 5b^2$
3) $(a^4b^5)(a^5b^4)(5)$
4) $(a^3b^2)(-b^2)(-5a^3b^2)(5b^2)$
5) $(x + 3)(x - 5)$
6) $(x + 7)(x - 5)$
7) $(x - 5)(x - 3)$
8) $(x + 10)(x + 11)$
9) $(x + 10)^2$
10) $(x^4 - 7)(x^4 + 7)$
11) $(x^4 - 7)^2$
12) $x^3(x^4 - 7)(x^4 - 7)$
13) $(x^3 + 3y)(x^2 - 2y)$
14) $2p^2q^3(3pq^4)^2$
15) $2p^2q^3(3p + q^4)^2$
16) $3xy(x - 2y)(3x - 4y)$
17) $(x + 5)^3$

18) **Simplify.** Assume that x is positive.
   a) $\sqrt{16x^8}$ b) $\sqrt{25x^{16}y^{10}}$

19) **Simplify.** Give answers without negative exponents.
   a) $\left(\frac{5}{6}\right)^{-2}$ b) $(4x^2y^{-3})^{-2}$

20) a) Simplify $\frac{1}{4}x^2y(2xy^2)^3$
   Evaluate given x = 4; y = ½
   b) $\frac{1}{4}x^2y(2xy^2)^3$
   c) $2x^5y^7$
   Evaluate given x = –2; y = 1
   d) $\frac{1}{4}x^2y(2xy^2)^3$
   e) $2x^5y^7$
   f) What do answers b through e demonstrate?

21) **Rewrite** each number (given in scientific notation) in three ways (which are all equal to the original number):
- Without a decimal point.
- Without a negative exponent.
- Standard decimal form.

Example: $6.38 \cdot 10^{-5}$

Solutions: $638 \cdot 10^{-7}$; $\frac{6.38}{10^5}$;

and 0.0000638

   a) $7.6 \cdot 10^{-3}$

   b) $5.107 \cdot 10^{-2}$

Convert into scientific notation:

22) 0.0000064
23) 45,300,000,000
24) 0.0006002
25) 8,700

Convert into standard decimal form:

26) $9.2 \cdot 10^8$
27) $7.39 \cdot 10^{-5}$
28) $8.5472 \cdot 10^4$
29) $6.36 \cdot 10^{-1}$
30) $2.64 \cdot 10^0$

Section B

Simplify.

31) $3xy(x - 2y)(3x - 4y)$
32) $(x - 2y)(3xy)(3x - 4y)$
33) $(x + 3)(x - 5)(x + 5)$
34) $(x + 3)(x - 5)^2$
35) $(x + 3)^4$
36) $\frac{5x^{-1}y^3z^{-2}}{3y^{-2}}$
37) $\frac{(x^8 y^2 z^{-2})^{-2}}{(x^{-4} z^3 y^4)^5}$

Problem Set #11

Section A

Simplify.

1) $7x^3 - x^3$
2) $4x^3y^2 + 3x^3y$
3) $(4x^3y^2)(3x^3y)$
4) $\sqrt{25x^{100}}$
5) $\left(\frac{3}{4}\right)^{-1}$
6) $\left(\frac{4}{5}\right)^{-2}$
7) $(5x^{-3})^{-2}$
8) $\left(\frac{2x^{-3}}{3}\right)^{-3}$
9) $(x + 6)^2$
10) $(x + 6)(x - 6)$
11) $(x + 3)(x - 4)$
12) $(x + 17)(x - 1)$
13) $(x - 1)(x - 12)$
14) $(3x - 4)(2x + 5)$
15) $(x + 3y)(x - 4)$

Solve for x in terms of y.

16) $y = 5x - 3$

Solve.

17) $4x + 9 = 5x - 2$
18) $8(4x + 2) = -3(3x - 6)$
19) $\frac{8}{3x-6} = \frac{-3}{4x+2}$
20) $7(x + 3) = 12 - (2 - x)$
21) $6 - 4(5x - 3) + 4x = 5 - 2(x + 3) + 5$
22) $(x + 3)(x - 2) = (x + 9)^2$

Section B

Simplify.

23) $\frac{8x^3y^{-2}}{6x^{-5}z^{-4}}$
24) $\frac{4x^{-4}y^8z^{-7}}{20x^2y^3z^{-2}}$
25) $(x^3 - 2y^2)(x^5 + 4y^2)$
26) $(2x^2y)(3x^2y^3)(x^2y^3)$
27) $(2x^2y)(3x^2 - y^3)(x^2 - y^3)$
28) $(x - 4)(x + 2)^2$
29) $(x - 4)(x + 2)(x - 2)$
30) $(3x - 2)^3$

Solve for x in terms of y.

31) $\frac{1}{3}y - \frac{3}{4}x = \frac{2}{3}$

Solve.

32) $x(x + 3)^2 = (x + 2)^3$
33) $(6x-2)(3x-1) = (9x+1)(2x-3)$
34) $\frac{5}{8} - \frac{3}{8}\left(\frac{4}{9}x + 1\frac{1}{3}\right) = 2\frac{1}{4}\left(\frac{1}{3}x - \frac{8}{15}\right) - \frac{1}{2}\left(\frac{2}{3}x - 1\frac{2}{5}\right)$