Exam 1

Name: _____

Place your answers in the spaces provided. You must show correct work to receive credit.

(8 pts) 1. Evaluate the following expression for
$$a = -3$$
 and $b = 4$:
 $10(2a + b) \div (a^2 - b) + |6a|$
 $10(2(-3) + 4) \div ((-3)^2 - 4) + |6(-3)|$
 $= 10(-6 + 4) \div (9 - 4) + |-18|$
 $= 10(-2) \div 5 + 18$
 $= -20 \div 5 + 18$
 $= -4 + 18 = 14$

14

(6 pts) 2. Multiply and express your answer in scientific notation.

$$(8.2 \times 10^{-25})(2.5 \times 10^{11})$$

$$= 20.5 \times 10^{-25+11}$$
$$= 20.5 \times 10^{-14}$$
$$= 2.05 \times 10^{1} \times 10^{-14}$$
$$= 2.05 \times 10^{-13}$$

2.05×10^{-13}	
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(8 pts) 3. Perform the indicated operations and simplify. Do not use a calculator. Express your asnwer as a fraction in lowest terms.

$$\frac{4}{5} - \frac{2}{3} \quad \div \frac{8}{25}$$

$$= \frac{12}{15} - \frac{10}{15} \div \frac{8}{25}$$
$$= \frac{2}{15} \times \frac{25}{8}$$
$$= \frac{1}{3} \times \frac{5}{4} = \frac{5}{12}$$

5	
12	

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(10 pts) 4. Shane is going to invest \$4200 at a simple interest rate of 8.5%. Use the formula, A = P + P r t to find how long it will take for the investment to be worth \$6300. Round your answer to one decimal place.

4200 + (4200)(.085)(t) = 63004200 + 357t = 6300357t = 2100 $t \quad 5.9$

(8 pts) 5. Solve
$$W = \frac{2c + d}{4}$$
 for c.

$$4W = 2c + d$$
$$4W - d = 2c$$
$$\frac{4W - d}{2} = c$$

 $c = \frac{4W-d}{2} \text{ or } 2W - \frac{d}{2}$

5.9 years

(8 pts) 6. Simplify.

$$4x - [3 - 2(5x + 6)] + 2x - 6$$

$$4x - [3 - 10x - 12] + 2x - 6$$

= 4x - (-10x - 9) + 2x - 6
= 4x + 10x + 9 + 2x - 6
= 16x + 3

16x + 3

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(12 pts) 7. Solve the following equations for x.

(6 pts) (a)
$$11x = \frac{1}{4}(24 + 4x)$$

 $11x = 6 + x$
 $10x = 6$
 $x = \frac{6}{10}$
(6 pts) (b) $3(2x - 1) = 5(x + 2)$
 $6x - 3 = 5x + 10$
 $x = 13$
 $x = 13$

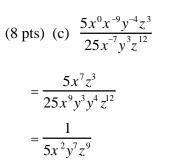
(20 pts) 8. Simplify completely. Do not leave negative exponents in your answer.

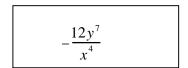
(6 pts) (a)
$$(6x^{-12}y^5)(-2x^8y^2)$$

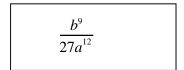
= $-12x^{-12+8}y^{5+2}$
= $-12x^{-4}y^7$

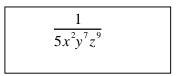
(6 pts) (b) $(3a^4b^{-3})^{-3}$











Exam 1

Name:

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(8 pts) 9. Translate the following expression into a mathematical equation. DO NOT SOLVE THE EQUATION: A boat travels at a rate of 23 km/h in still water. It is traveling in a river that has a current of 8 km/h. How long would it take the boat to travel 75 km downstream. (Name a variable and set up an equation)

let *t*=time for boat to travel 75 km downstream

	r	t	d
downstream	23+8	t	75

(rate)(time)=distance

(23+8)t = 75

$$(23+8)t = 75 \text{ or } 31t = 75$$

(12 pts) 10. A piece of wire 15 meters long is cut into three pieces. The second piece is $\frac{1}{3}$ as long as the first piece, while the third piece is 4 meters longer than the second piece. Find the length of each piece. (Name a variable, set up an equation, and solve.)

let x=length of the first piece

then $\frac{1}{3}x = \text{length of the second piece}$ and $\frac{1}{3}x + 4 = \text{length of third piece}$ $x + \frac{1}{3}x + \frac{1}{3}x + 4 = 15$ $x + \frac{2}{3}x = 11$ $\frac{5}{3}x = 11$ $x = (11) \frac{3}{5} = \frac{33}{5}$

length of first piece = 6.6

6.6 m

length of second piece =

length of third piece =

6.2 m

2.2 m

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Name: _____