

EXPONENTS PRACTICE

Midterm Review Worksheet A : Answers

Simplify:

1. $3 \cdot 4^3$

2. $4x^3 \cdot 2x^3$

3. $x^5 \cdot x^3$

4. $2x^3 \cdot 2x^2$

5. $\frac{6^5}{6^3}$

6. $\frac{x^4}{x^7}$

7. 8^0

8. $-(9x)^0$

9. $(y^4)^3$

10. $(x^2y)^4$

11. $\frac{6x^7}{2x^4}$

12. $\frac{8x^5}{4x^2}$

13. $(2cd^4)^2(cd)^5$

14. $(2fg^4)^4(fg)^6$

15. $\frac{x^5y^6}{xy^2}$

16. $\frac{x^2y^5}{xy^4}$

17. $\left(\frac{4x^5y}{16xy^4}\right)^3$

18. $\left(\frac{5x^3y}{20xy^5}\right)^4$

19. y^{-7}

20. 7^{-2}

21. $\frac{1}{x^{-5}}$

22. $\frac{1}{2^{-4}}$

23. $x^5 \cdot x^{-1}$

24. x^{-6}

25. $x^9 \cdot x^{-7}$

26. $(j^{-13})(j^4)(j^6)$

27. $\frac{x^{-1}}{x^{-8}}$

28. $\frac{52x^6}{13x^{-7}}$

29. $f^{-3}(f^2)(f^{-3})$

30. $\frac{x^{-4}}{x^{-9}}$

31. $\frac{24x^6}{12x^{-8}}$

32. $\frac{3x^2y^{-3}}{12x^6y^3}$

33. $(2x^3y^{-3})^{-2}$

34. $\frac{2x^4y^{-4}}{8x^7y^3}$

35. $(4x^4y^{-4})^3$

36. $5x^2y(2x^4y^{-3})$

37. $\left(\frac{-7a^2b^3c^0}{3a^3b^4c^3}\right)^{-4}$

38. $\left(\frac{-2a^3b^2c^0}{3a^2b^3c^7}\right)^{-2}$

EXPONENTS PRACTICE ANSWERS

1. 192

2. $8x^6$

3. x^8

4. $4x^5$

5. 36

6. $\frac{1}{x^3}$

7. 1

8. -1

9. y^{12}

10. x^8y^4

11. $3x^3$

12. $2x^3$

13. $4c^7d^{13}$

14. $16f^{10}g^{22}$

15. x^4y^4

16. xy

17. $\frac{x^{12}}{64y^9}$

18. $\frac{x^8}{256y^{16}}$

19. $\frac{1}{y^7}$

20. $\frac{1}{49}$

21. x^5

22. 16

23. x^4

24. $\frac{1}{x^6}$

25. x^2

26. $\frac{1}{j^3}$

27. x^7

28. $4x^{13}$

29. $\frac{1}{f^4}$

30. x^5

31. $2x^{14}$

32. $\frac{1}{4x^4y^6}$

33. $\frac{y^6}{4x^6}$

34. $\frac{1}{4x^3y^7}$

35. $\frac{64x^{12}}{y^{12}}$

36. $\frac{10x^6}{y^2}$

37. $\frac{81a^4b^4c^{12}}{2401}$

38. $\frac{9b^2c^{14}}{4a^2}$

Student Name: _____

Score: _____

Midterm Review Worksheet B: Answers

Laws of Exponents Worksheet

Rewrite the following as single exponent using exponent rules:

Problems

Work Space

$\frac{4^5 \times 4^6}{4^3}$ <p>Answer: 4^8</p>	$\frac{4^{5+6}}{4^3} = \frac{4^{11}}{4^3}$ $= 4^{11-3}$ $= 4^8$
$(3^{-2})^7 \times 3^3 \times 3^7$ <p>Answer: $\frac{1}{3^4}$</p>	$3^{-14+3+7}$ $= 3^{-4}$ $= \frac{1}{3^4}$
$\frac{(5^5)^{20}}{5^4 \times 5^{-7}}$ <p>Answer: 5^{103}</p>	$\frac{5^{5(20)}}{5^{4+(-7)}} = \frac{5^{100}}{5^{-3}}$ $= 5^{100 - (-3)}$ $= 5^{103}$
$\frac{\left(\left(\frac{11}{20}\right)^4 \times \left(\frac{11}{20}\right)^{-8}\right)^5}{\left(\frac{11}{20}\right)^{-6}}$ <p>Answer: $\left(\frac{20}{11}\right)^{14}$ OR $\frac{20^{14}}{11^{14}}$</p>	$\frac{\left(\left(\frac{11}{20}\right)^{4+(-8)}\right)^5}{\left(\frac{11}{20}\right)^{-6}} = \frac{\left(\frac{11}{20}\right)^{-20}}{\left(\frac{11}{20}\right)^{-6}}$ $= \left(\frac{11}{20}\right)^{-20 - (-6)}$ $= \left(\frac{11}{20}\right)^{-14} \Rightarrow \frac{11^{-14}}{20^{-14}} = \frac{20^{14}}{11^{14}}$
$\left(\frac{4^{-3} \times 4^{-6}}{4^7 \times 4^2}\right)^4$ <p>Answer: $\frac{1}{4^{72}}$</p>	$\left(\frac{4^{-3+(-6)}}{4^{7+2}}\right)^4 = \left(\frac{4^{-9}}{4^9}\right)^4$ $= (4^{-18})^4$ $= 4^{-72} \Rightarrow \frac{1}{4^{72}}$

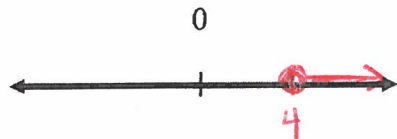
INTERVAL NOTATION WORKSHEET

NAME: _____

Midterm Review Worksheet C: Answers

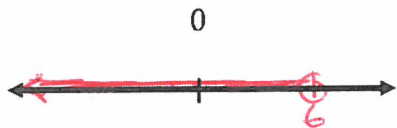
Put in interval notation and draw a graph of each inequality.

1. $x \geq 4$



1. $[4, \infty[$

2. $x < 6$



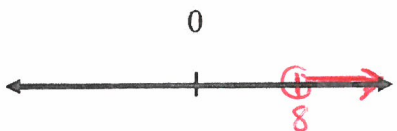
2. $] -\infty, 6[$

3. $x \leq -2$



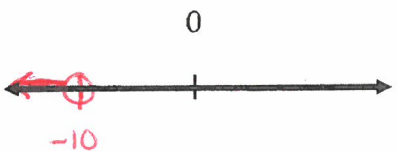
3. $] -\infty, -2]$

4. $x > 8$



4. $] 8, \infty[$

5. $x < -10$



5. $] -\infty, -10[$

Write each interval as an inequality.

6. $(-\infty, -8]$ OR $] -\infty, -8]$

6. $x \leq -8$

7. $[5, \infty)$ OR $[5, \infty[$

7. $x \geq 5$

8. $(-2, \infty)$ OR $] -2, \infty[$

8. $x > -2$

9. $[-10, \infty)$ OR $[-10, \infty[$

9. $x \geq -10$

10. $(-\infty, 6)$ OR $] -\infty, 6[$

10. $x < 6$

In each part, express the set in interval notation and as an inequality.



Inequality: $1 < x < 5$

Interval: $]1, 5[$



Inequality: $2 \leq x \leq 7$

Interval: $[2, 7]$



Inequality: $-3 < x \leq -1$

Interval: $] -3, -1]$



Inequality: $-3 < x \leq 4$

Interval: $] -3, 4]$



Inequality: $x \geq 5$

Interval: $[5, \infty[$



Inequality: $x \leq 0$

Interval: $] -\infty, 0]$

Adding and Subtracting Polynomials

Simplify each expression.

$$1) (5p^2 - 3) + (2p^2 - 3p^3) \\ -3p^3 + 7p^2 - 3$$

$$2) (a^3 - 2a^2) - (3a^2 - 4a^3) \\ 5a^3 - 5a^2$$

$$3) (4 + 2n^3) + (5n^3 + 2) \\ 7n^3 + 6$$

$$4) (4n - 3n^3) - (3n^3 + 4n) \\ -6n^3$$

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

$$6) (4r^3 + 3r^4) - (r^4 - 5r^3) \\ 2r^4 + 9r^3$$

$$7) (5a + 4) - (5a + 3) \\ 1$$

$$8) (3x^4 - 3x) - (3x - 3x^4) \\ 6x^4 - 6x$$

$$9) (-4k^4 + 14 + 3k^2) + (-3k^4 - 14k^2 - 8) \\ -7k^4 - 11k^2 + 6$$

$$10) (3 - 6n^5 - 8n^4) - (-6n^4 - 3n - 8n^5) \\ 2n^5 - 2n^4 + 3n + 3$$

$$11) (12a^5 - 6a - 10a^3) - (10a - 2a^5 - 14a^4) \\ 14a^5 + 14a^4 - 10a^3 - 16a$$

$$12) (8n - 3n^4 + 10n^2) - (3n^2 + 11n^4 - 7) \\ -14n^4 + 7n^2 + 8n + 7$$

$$13) (-x^4 + 13x^5 + 6x^3) + (6x^3 + 5x^5 + 7x^4) \\ 18x^5 + 6x^4 + 12x^3$$

$$14) (9r^3 + 5r^2 + 11r) + (-2r^3 + 9r - 8r^2) \\ 7r^3 - 3r^2 + 20r$$

$$15) (13n^2 + 11n - 2n^4) + (-13n^2 - 3n - 6n^4) \\ -8n^4 + 8n$$

$$16) (-7x^5 + 14 - 2x) + (10x^4 + 7x + 5x^5) \\ -2x^5 + 10x^4 + 5x + 14$$

$$17) (7 - 13x^3 - 11x) - (2x^3 + 8 - 4x^5)$$

$$4x^5 - 15x^3 - 11x - 1$$

$$18) (13a^2 - 6a^5 - 2a) - (-10a^2 - 11a^5 + 9a)$$

$$5a^5 + 23a^2 - 11a$$

$$19) (3v^5 + 8v^3 - 10v^2) - (-12v^5 + 4v^3 + 14v^2)$$

$$15v^5 + 4v^3 - 24v^2$$

$$20) (8b^3 - 6 + 3b^4) - (b^4 - 7b^3 - 3)$$

$$2b^4 + 15b^3 - 3$$

$$21) (k^4 - 3 - 3k^3) + (-5k^4 + 6k^3 - 8k^5)$$

$$-8k^5 - 4k^4 + 3k^3 - 3$$

$$22) (-10k^2 + 7k + 6k^4) + (-14 - 4k^4 - 14k)$$

$$2k^4 - 10k^2 - 7k - 14$$

$$23) (-7n^2 + 8n - 4) - (-11n + 2 - 14n^2)$$

$$7n^2 + 19n - 6$$

$$24) (14p^4 + 11p^2 - 9p^5) - (-14 + 5p^5 - 11p^2)$$

$$-14p^5 + 14p^4 + 22p^2 + 14$$

$$25) (8k + k^2 - 6) - (-10k + 7 - 2k^2)$$

$$3k^2 + 18k - 13$$

$$26) (-9v^2 - 8u) + (-2uv - 2u^2 + v^2) + (-v^2 + 4uv)$$

$$-9v^2 + 2uv - 2u^2 - 8u$$

$$27) (4x^2 + 7x^3y^2) - (-6x^2 - 7x^3y^2 - 4x) - (10x + 9x^2)$$

$$14x^3y^2 + x^2 - 6x$$

$$28) (-5u^3v^4 + 9u) + (-5u^3v^4 - 8u + 8u^2v^2) + (-8u^4v^2 + 8u^3v^4)$$

$$-2u^3v^4 - 8u^4v^2 + 8u^2v^2 + u$$

$$29) (-9xy^3 - 9x^4y^3) + (3xy^3 + 7y^4 - 8x^4y^4) + (3x^4y^3 + 2xy^3)$$

$$-8x^4y^4 - 6x^4y^3 + 7y^4 - 4xy^3$$

$$30) (y^3 - 7x^4y^4) + (-10x^4y^3 + 6y^3 + 4x^4y^4) - (x^4y^3 + 6x^4y^4)$$

$$-9x^4y^4 - 11x^4y^3 + 7y^3$$

Multiplying Polynomials

Find each product.

1) $6v(2v + 3)$
 $12v^2 + 18v$

2) $7(-5v - 8)$
 $-35v - 56$

3) $2x(-2x - 3)$
 $-4x^2 - 6x$

4) $-4(v + 1)$
 $-4v - 4$

5) $(2n + 2)(6n + 1)$
 $12n^2 + 14n + 2$

6) $(4n + 1)(2n + 6)$
 $8n^2 + 26n + 6$

7) $(x - 3)(6x - 2)$
 $6x^2 - 20x + 6$

8) $(8p - 2)(6p + 2)$
 $48p^2 + 4p - 4$

9) $(6p + 8)(5p - 8)$
 $30p^2 - 8p - 64$

10) $(3m - 1)(8m + 7)$
 $24m^2 + 13m - 7$

11) $(2a - 1)(8a - 5)$
 $16a^2 - 18a + 5$

12) $(5n + 6)(5n - 5)$
 $25n^2 + 5n - 30$

$$13) (4p - 1)^2 \\ 16p^2 - 8p + 1$$

$$14) (7x - 6)(5x + 6) \\ 35x^2 + 12x - 36$$

$$15) (6n + 3)(6n - 4) \\ 36n^2 - 6n - 12$$

$$16) (8n + 1)(6n - 3) \\ 48n^2 - 18n - 3$$

$$17) (6k + 5)(5k + 5) \\ 30k^2 + 55k + 25$$

$$18) (3x - 4)(4x + 3) \\ 12x^2 - 7x - 12$$

$$19) (4a + 2)(6a^2 - a + 2) \\ 24a^3 + 8a^2 + 6a + 4$$

$$20) (7k - 3)(k^2 - 2k + 7) \\ 7k^3 - 17k^2 + 55k - 21$$

$$21) (7r^2 - 6r - 6)(2r - 4) \\ 14r^3 - 40r^2 + 12r + 24$$

$$22) (n^2 + 6n - 4)(2n - 4) \\ 2n^3 + 8n^2 - 32n + 16$$

$$23) (6n^2 - 6n - 5)(7n^2 + 6n - 5) \\ 42n^4 - 6n^3 - 101n^2 + 25$$

Solving Multi-Step Equations

Solve each equation.

1) $4n - 2n = 4$

$n = 2$

2) $-12 = 2 + 5v + 2v$

$v = -2$

3) $3 = x + 3 - 5x$

$x = 0$

4) $x + 3 - 3 = -6$

$x = -6$

5) $-12 = 3 - 2k - 3k$

$k = 3$

6) $-1 = -3r + 2r$

$r = 1$

7) $6 = -3(x + 2)$

$x = -4$

8) $-3(4r - 8) = -36$

$r = 5$

9) $24 = 6(-x - 3)$

$x = -7$

10) $75 = 3(-6n - 5)$

$n = -5$

$$11) -3(1 + 6r) = 14 - r$$

$$r = -1$$

$$12) 6(6v + 6) - 5 = 1 + 6v$$

$$v = -1$$

$$13) -4k + 2(5k - 6) = -3k - 39$$

$$k = -3$$

$$14) -16 + 5n = -7(-6 + 8n) + 3$$

$$n = 1$$

$$15) 10p + 9 - 11 - p = -2(2p + 4) - 3(2p - 2)$$

$$p = 0$$

$$16) -10n + 3(8 + 8n) = -6(n - 4)$$

$$n = 0$$

$$17) 10(x + 3) - (-9x - 4) = x - 5 + 3$$

$$x = -2$$

$$18) 2(2k + 11) = 12(2k + 12)$$

$$k = -6.1$$

$$19) -12(x - 12) = -9(1 + 7x)$$

$$x = -3$$

$$20) -11 + 10(p + 10) = 4 - 5(2p + 11)$$

$$p = -7$$

Critical thinking question:

21) Explain two ways you could solve $20 = 5(-3 + x)$

(1) Divide by 5 first, or (2) Distribute the 5 first.

$$4 = -3 + x$$

$$7 = x$$

$$20 = -15 + 5x$$

$$35 = 5x$$

$$7 = x$$

Name : _____

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Teacher : _____

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Midterm Review Worksheet G Answers

Scientific Notation

Write each number in standard format.

$$1) 5.4491 \times 10^{-1} = \underline{0.54491}$$

$$2) 1.23 \times 10^{-6} = \underline{0.000001230}$$

$$3) 7.5596 \times 10^1 = \underline{75.596}$$

$$4) 3.2787 \times 10^5 = \underline{327870}$$

$$5) 7.17 \times 10^8 = \underline{717000000}$$

$$6) 4.53 \times 10^{-2} = \underline{0.0453}$$

$$7) 5.693 \times 10^{-4} = \underline{0.0005693}$$

$$8) 1.24 \times 10^{-3} = \underline{0.00124}$$

$$9) 6.2781 \times 10^4 = \underline{62781}$$

$$10) 6.4446 \times 10^7 = \underline{64446000}$$

Write each number in scientific notation.

$$1) 0.000063950 = \underline{6.395 \times 10^{-5}}$$

$$2) 32210 = \underline{3.221 \times 10^4}$$

$$3) 4484800000 = \underline{4.4848 \times 10^9}$$

$$4) 0.0000000034220 = \underline{3.422 \times 10^{-9}}$$

$$5) 0.000000330540 = \underline{3.3054 \times 10^{-7}}$$

$$6) 0.00000007350 = \underline{7.35 \times 10^{-8}}$$

$$7) 754.7 = \underline{7.547 \times 10^2}$$

$$8) 1254 = \underline{1.254 \times 10^3}$$

$$9) 0.000527 = \underline{5.27 \times 10^{-4}}$$

$$10) 2081000 = \underline{2.081 \times 10^6}$$



Answers to Multiplying and Dividing Using Scientific Notation

Midterm Review Worksheet # Answers

1) 9.407×10^{-11}

2) 1.16×10^{-1}

3) 1.024×10^{10}

4) 9.006×10^{-9}

5) 3.8×10^1

6) 3.68×10^3

7) 9.75×10^2

8) 6.928×10^{-3}

9) 9.182×10^4

10) 1.407×10^6

11) 1.038×10^{-3}

12) 1.02×10^1

13) 4.209×10^0

14) 1.458×10^{16}

15) 9.766×10^{-9}

16) 9.064×10^{-27}

17) 8.853×10^{-9}

18) 2.873×10^{-2}

19) 5.313×10^{-1}

20) 6.662×10^{-4}

21) 3.8×10^{-2}

22) 2.4×10^8

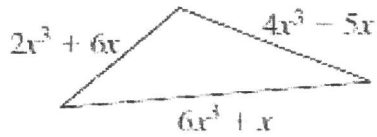
23) 1.176×10^3

24) 2.621×10^{-19}

POLYNOMIALS – WORD PROBLEMS

WRITE AN EXPRESSION FOR THE PERIMETER.

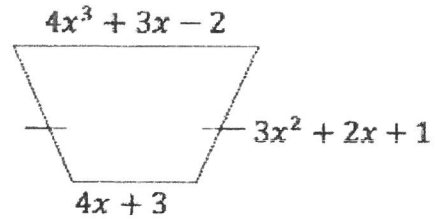
1.)



$P = 12x^3 + 2x$

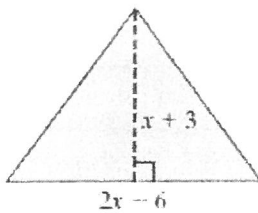
WRITE AN EXPRESSION FOR THE AREA.

2.)



$P = 4x^3 + 6x^2 + 11x + 3$

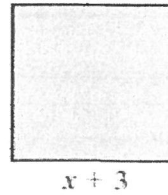
3.)



$A = \frac{(2x-6)(x+3)}{2} = \boxed{x^2 - 9}$

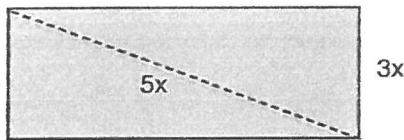
4.)

Square



$A = (x+3)(x+3) = \boxed{4x^2 + 12x + 9}$

5.)



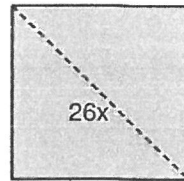
$a = 3x$
 $c = 5x$

so $b = 4x$

$A = (3x)(4x)$
 $= \boxed{12x^2}$

6.)

Square

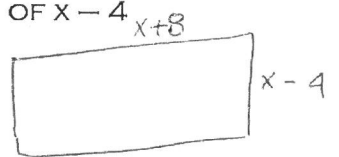


$A = s^2$
 $= (18.38x)^2$
 $= \boxed{338x^2}$

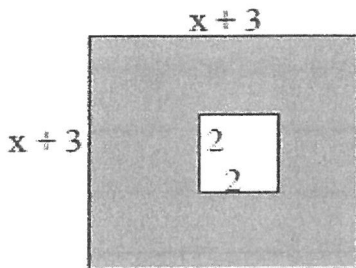
let 1 side length = s

$s^2 + s^2 = (26x)^2 \quad s = 18.38x$

7.) A RECTANGULAR GARDEN HAS A LENGTH OF $x + 8$ UNITS AND A WIDTH OF $x - 4$ UNITS. DRAW A DIAGRAM, AND LABEL THE DIMENSIONS. FIND THE AREA.



8.) FIND THE AREA OF THE SHADED REGION.



$A = (x+8)(x-4)$
 $= \boxed{x^2 + 4x - 32}$

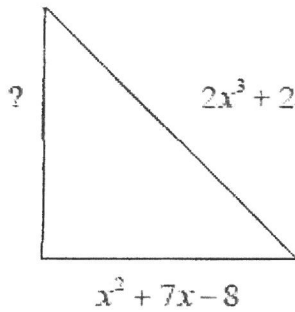
$A_{\text{Big square}} = (x+3)(x+3) = x^2 + 6x + 9$

$A_{\text{small square}} = 2 \times 2 = 4$

$A_{\text{shaded}} = x^2 + 6x + 9 - 4 = \boxed{x^2 + 6x + 5}$

9.) GIVEN THE PERIMETER, FIND THE MISSING SIDE.

$$P = 2x^3 + 4x^2 + 6x + 3$$



$$P = S_1 + S_2 + S_3$$

$$2x^3 + 2x^2 - 4x + 6 \quad 2x^3 + 4x^2 + 6x + 3 = (2x^3 + 2x^2 - 4x + 6) + (x^2 + 7x - 8) + S_3$$

$$S_3 = x^2 + 3x + 5$$

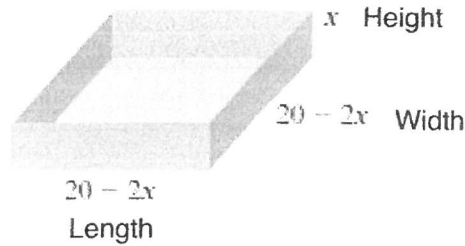
10.) A BOX IS CREATED FROM A SHEET OF CARDBOARD 20 IN. ON A SIDE BY CUTTING A SQUARE FROM EACH CORNER AND FOLDING UP THE SIDES. LET X REPRESENT THE LENGTH OF THE SIDES OF THE SQUARES REMOVED FROM EACH CORNER. FIND AN EXPRESSION FOR THE VOLUME OF THE BOX IN TERMS OF X.

Volume = Length x Width x Height

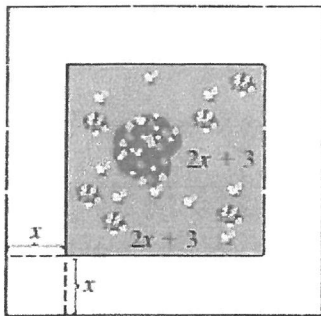
$$V = (20 - 2x)(20 - 2x)(x)$$

$$= (400 - 80x + 4x^2)(x)$$

$$= 400x - 80x^2 + 4x^3$$



11.) A SQUARE GARDEN IS SURROUNDED BY A WALKWAY OF WIDTH X.



A) FIND THE AREA OF THE GARDEN.

$$A = (2x + 3)(2x + 3)$$

$$= 4x^2 + 12x + 9$$

B) FIND THE AREA OF THE WALKWAY AND THE GARDEN.

Dimensions : $2x + 3 + x + x = 4x + 3$

$$A = (4x + 3)(4x + 3)$$

$$= 16x^2 + 24x + 9$$

12.) IF THE PERIMETER OF A RECTANGLE IS EXPRESSED BY $6x^2 + 8x + 8$ AND THE WIDTH IS $2x^2 + 1$, FIND AN EXPRESSION FOR THE LENGTH.

$$P = 2l + 2w$$

$$6x^2 + 8x + 8 = 2l + 2(2x^2 + 1)$$

$$\frac{2x^2 + 8x + 6}{2} = \frac{2l}{2}$$

$$l = x^2 + 4x + 3$$

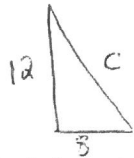
Name ANSWERS

Date _____
Midterm Review Worksheet J Answers

Using the Pythagorean Theorem in Word Problems

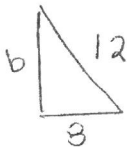
Solve by drawing a picture, identifying a, b, and c, and applying the Pythagorean Theorem. Don't forget to give your answer with units!

1. Two sides of a right triangle are 8 and 12 in.
a. Find the missing side if these are the lengths of the legs.



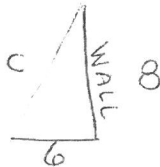
$$c = 14.42 \text{ in}$$

- b. Find the missing side if these are the lengths of a leg and hypotenuse.



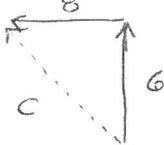
$$b = 8.94 \text{ in}$$

2. The foot of a ladder is placed 6 feet from a wall. If the top of the ladder rests 8 feet up on the wall, how long is the ladder?



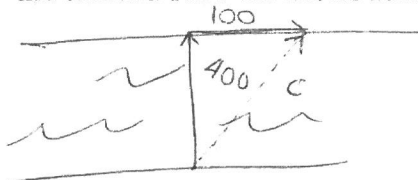
$$c = 10 \text{ feet}$$

3. John leaves school to go home. He walks 6 blocks North and then 8 blocks west. How far is John from the school?



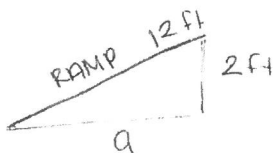
$$c = 10 \text{ blocks}$$

4. Scott wants to swim across a river that is 400 meters wide. He begins swimming perpendicular to the shore he started from but ends up 100 meters down river from where he started because of the current. How far did he actually swim from his starting point?



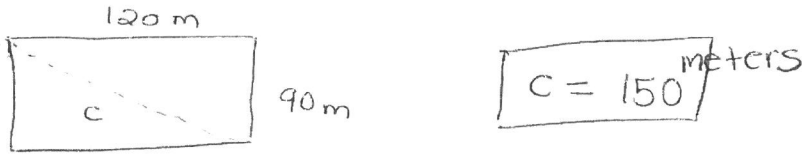
$$c = 412.31 \text{ meters}$$

5. A ramp is placed from a ditch to a main road 2 ft. above the ditch. If the length of the ramp is 12 ft., how far away is the bottom of the ramp from the road?



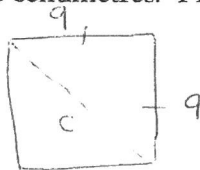
$$a = 8.94 \text{ ft.}$$

6. A soccer field is a rectangle 90 meters wide and 120 meters long. The coach asks players to run from one corner to the corner diagonally across. What is this distance?



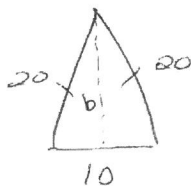
7. The area of a square is 81 square centimetres. First, find the length of a side. Then, find the length of the diagonal.

Area = 81
Side = 9



$C = 12.73$

8. An isosceles triangle has congruent sides of 20 cm. The base is 10 cm. Find the height of the triangle.

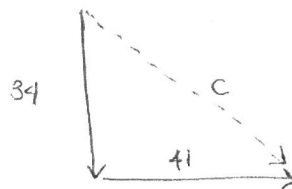


$10 \div 2 = 5$

$a = 5$
 $C = 20$

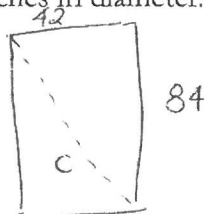
$b = 19.36$
cm

9. To get from point A to point B you must avoid walking through a pond. To avoid the pond, you must walk 34 meters south and 41 meters east. To the nearest meter, how many meters would be saved if it were possible to walk through the pond?



$C = 56.59 \text{ m}$

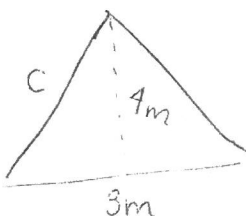
10. Jill's front door is 42 inches wide and 84 inches tall. She purchased a circular table that is 96 inches in diameter. Will the table fit through the front door? Explain.



$C = 93.91$

No because even tilted, the table won't fit through the diagonal of the door.

11. In the Old West, settlers often fashioned tents out of a piece of cloth thrown over tent poles and then secured to the ground with stakes forming an isosceles triangle. How long would the cloth have to be so that the opening of the tent was 4 meters high and 3 meters wide?



$3 \div 2 = 1.5 \text{ m}$

$a = 1.5$
 $b = 4$

$C = 4.272$

$4.272 =$ length of cloth on one side of the tent

$4.272 \times 2 = 8.54 \text{ m}$

Name: ANSWERS Group: _____
Midterm Review Worksheet K

Factoring by Greatest Common Factor

Factor the greatest common factor out of the polynomial.

1. $8x^2 + 10x$
 $2x(4x + 5)$

2. $12y - 16$
 $4(3y - 4)$

3. $-15d^5 + 45d^3$
 $-15d^3(d^2 - 3)$
OR
 $15d^3(-d^2 + 3)$

4. $13a + 20b$
can't factor

5. $c^3 + c^2 - c$
 $c(c^2 + c - 1)$

6. $6n^2 - 30n + 42$
 $6(n^2 - 5n + 7)$

7. $-7m^2 - 10m + 17$
can't factor

8. $18p^3 - 63p^2 - 9p$
 $9p(2p^2 - 7p - 1)$
OR
 $-9p(-2p^2 + 7p + 1)$

9. $18x^2 - 50y^2$
 $2(9x^2 - 25y^2)$

10. $100z^9 + 50z^6 - 75z^5$
 $25z^5(4z^4 + 2z^1 - 3)$

11. $36rs^2 - 108r^2s^3$
 $36rs^2(1 - 3rs)$

12. $36k - 30$
 $6(6k - 5)$

13. $a^7b - a^{10}$
 $a^7(b - a^3)$

14. $2c^5d^4 - 3c^4 + 4c^3$
 $c^3(2c^2d^4 - 3c + 4)$

15. $3g^8 + 3g^7$
 $3g^7(g + 1)$

16. $18x^5 - 48x^4 + 56x^3 - 86x$
 $2x(9x^4 - 24x^3 + 28x^2 - 43)$

17. $23y^{10} - 46y^7 + 68y^2 + 10y$
 $y(23y^9 - 46y^6 + 68y + 10)$

Name : _____

Score : _____

Teacher : _____

Date : _____

Midterm Review Worksheet L Answers

Factoring By Grouping

Factor each completely. If non-factorable, write "Non-factorable".

1) $q^3 - 8q^2 + 7q - 56$

$$(q^2 + 7)(q - 8)$$

6) $w^3 + 8w^2 - 2w - 16$

$$(w^2 - 2)(w + 8)$$

2) $6m^3 + 36m^2 - 12m - 72$

$$6(m^2 - 2)(m + 6)$$

7) $y^3 - 2y^2 + 5y - 10$

$$(y^2 + 5)(y - 2)$$

3) $4s^3 + 6s^2 + 6s + 9$

$$(2s^2 + 3)(2s + 3)$$

8) $36w^3 - 54w^2 + 24w - 36$

$$6(3w^2 + 2)(2w - 3)$$

4) $12r^3 - 27r^2 + 8r - 18$

$$(3r^2 + 2)(4r - 9)$$

9) $3h^3 - 18h^2 + 15h - 90$

$$3(h^2 + 5)(h - 6)$$

5) $m^3 - 9m^2 + 5m - 45$

$$(m^2 + 5)(m - 9)$$

10) $27x^3 - 63x^2 + 45x - 105$

$$3(3x^2 + 5)(3x - 7)$$

