

Summer
Review
Problems
for
Pre-Algebra

(Chapters 1-14)

Mrs. Kelli Dawson

Chapter 1

1) Use order of operations to solve each expression.

a) $\frac{200 + 16 \div 8}{5(3^2 + 3^2) + 11}$

b) $8 + 14 - 3^2 \div 3$

2) Evaluate if $z=3$, $b=7$, and $c=9$.

$$\frac{zb - c}{z}$$

3) Name each property illustrated below:

a) $7+3=3+7$ _____

b) $29 \cdot 0 = 0$ _____

c) $(5 \cdot 6)7 = 5(6 \cdot 7)$ _____

d) $5 \cdot 1 = 5$ _____

e) $19 + 0 = 19$ _____

f) $14 \cdot 2 = 2 \cdot 14$ _____

g) $(17+8) + 2 = 17 + (8+2)$ _____

4) State the domain and range for the following relation:

$$\{(-8, 5), (3, 6), (0, 2), (9, 2), (5, 8)\}$$

Domain _____

Range _____

5) Determine whether the relationship between the following quantities is positive, negative, or no relationship.

- a) study time, exam score _____
- b) height, weight _____
- c) # of miles driven, # of gallons of gas left in tank

- d) salary, # of siblings _____

6) Write an expression for each verbal phrase.

- a) seven less than a number _____
- b) the product of eight and a number _____
- c) the sum of twelve and a number _____
- d) the quotient of a number and two, increased by five

7) Simplify each expression.

a) $12 + (y + 8)$

b) $(7m)(4)$

Chapter 2

1) Replace each blank with $<$, $>$, or $=$.

a) -13 $\underline{\hspace{1cm}}$ -11

b) 27 $\underline{\hspace{1cm}}$ -28

c) $|-19|$ $\underline{\hspace{1cm}}$ $|19|$

2) Evaluate

a) $-16 + 9$

b) $17 + (-23)$

c) $-15 + 18$

d) $-4 + (-18)$

e) $16 - 25$

f) $-18 - 29$

g) $23 - (-37)$

h) $-50 - (-62)$

i) $(-7)(-8)$

j) $(16)(-3)$

k) $(25)(8)$

l) $(-14)(5)$

m) $200 \div (-10)$

n) $-64 \div (-8)$

o) $-72 \div 9$

p) $-81 \div (-3)$

3) Graph and label each point on a coordinate plane. Name the quadrant in which each point lies or the axis on which it lies.

a) A $(-2, 5)$

b) B $(-4, -3)$

c) C $(6, 2)$

d) D $(3, 0)$

e) E $(3, -2)$

f) F $(0, -4)$

4) Evaluate each absolute value expression.

a) $|-35|$

b) $|72|$

c) $|-16 + 7|$

Chapter 3

1) Name all sets to which the following numbers belong:

a) -17

b) $9.65\overline{3}$

c) $2.54316478\ldots$

d) 18

2) Change each fraction or mixed number to a decimal.

a) $\frac{17}{25}$

b) $3\frac{1}{3}$

c) $2\frac{5}{16}$

3) Change each decimal to a fraction or mixed number.

a) 9.62

b) $4.\overline{5}$

c) -0.014

4) Multiply

a) $-\frac{3}{4} \cdot \frac{8}{9}$

b) $(-3\frac{5}{6})(-4\frac{1}{2})$

c) $\frac{2}{5} \cdot \frac{9}{8} \cdot \frac{5}{12}$

d) $(-7)(-\frac{1}{2})$

5) Divide

a) $\frac{5}{8} \div \frac{3}{4}$

b) $-\frac{8}{11} \div \frac{4}{5}$

c) $3\frac{2}{7} \div 1\frac{1}{7}$

d) $-6 \div -\frac{2}{3}$

6) Add or subtract

a) $\frac{6}{11} + \frac{5}{11}$

b) $-\frac{2}{3} + \left(-\frac{4}{5}\right)$

c) $-5\frac{3}{4} - \left(-2\frac{1}{9}\right)$

d) $\frac{1}{4} - \frac{5}{6}$

e) $3\frac{1}{6} - 1\frac{5}{6}$

f) $\frac{-8}{15} + \frac{3}{5}$

7) State the reciprocal of each number.

a) $\frac{3}{8}$

b) 7

c) $-2\frac{1}{3}$

Chapter 4

- 1) Use the Distributive Property to rewrite each expression and simplify completely.

a) $3(-7+10)$

b) $5(x+9) + 4x$

c) $(d-11)3 + 23$

d) $5(x+3) + 2(x-4)$

- 2) Consider the following algebraic expression: $4x + 3 - 2x + y$.

State the terms _____

State the like terms _____

State the coefficients _____

State the constants _____

- 3) Solve and check each equation.

a) $n - 14 = 23$

b) $45 = y - (-13)$

c) $7x + 8 = 1$

d) $\frac{n}{3} + 2 = 5$

e) $\frac{4}{5}m = 8$

f) $-3p = -36$

4) Translate each word problem into an equation and solve.

- a) Sixteen increased by twice a number is twenty-four. Find the number.

Define variable _____

Write equation _____

Solution _____

- b) George pays \$40 per month for his gym membership and \$15 per hour for his trainer. If George paid \$145 last month, how many hours did he work with his trainer?

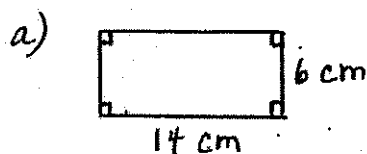
Define variable _____

Write equation _____

Solution _____

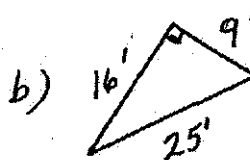
Chapter 5

1) Find the perimeter and area.



Perimeter = _____

Area = _____



Perimeter = _____

Area = _____

2) Write an inequality for each situation.

a) Susan is no more than thirty years old. _____

b) Eric scored at least twenty points. _____

c) The number of visitors exceeds thirteen. _____

3) Solve each equation and check.

a) $3x + 4 = 2x - 7$

b) $5(n + 3) = 5n - 4$

4) Solve each inequality and check. Graph your solution.

a) $n - 13 > 8$

b) $-6p \leq 42$

c) $5x + 14 < -16$

d) $\frac{n}{7} \geq -9$

p. 8

Chapter 6

① Write each ratio as a fraction in simplest form.

a) 9 dogs : 15 cats

b) 25 people to 5 cars

② Find each unit rate.

a) \$99.75 for 7 toys

b) \$0.65 for 5 oz

③ Complete each conversion.

a) 9 yd = ft

b) 2.5 gal = qt

c) $\frac{5 \text{ miles}}{1 \text{ hr}} = \frac{\text{ft}}{1 \text{ min}}$

④ Solve each proportion.

a) $\frac{x}{18} = \frac{6}{27}$

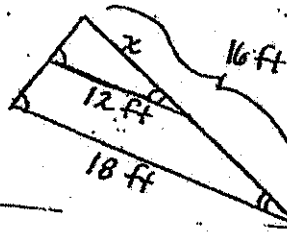
b) $\frac{5}{9} = \frac{n}{459}$

⑤ On a floor plan, 1 in. represents 3.5 feet. Use this scale to find the actual length and width of the room if on the blueprint it measures 4 in. by 5 in.

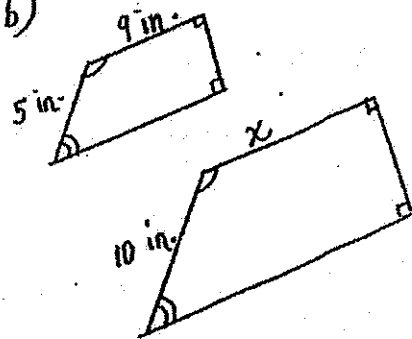
⑥ A scale is 1 in. = 6 ft. Find the scale factor.

⑦ Find x if the following figures are similar.

a)



b)



⑧ A building casts a shadow 24 feet long. A person who is 5 feet tall casts a 3 feet shadow. How tall is the building?

Chapter 7 Review

① Complete the chart.

	Decimals	Percents	Fractions
a)	0.14	_____	_____
b)	_____	36%	_____
c)	_____	_____	$\frac{2}{9}$

② Find the missing value using the % proportion.

a) 64% of 120 is what number?

b) What percent of 96 is 12?

③ Find the percent of change for a dress that was reduced from \$88 to \$55.

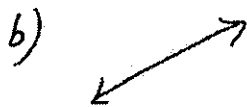
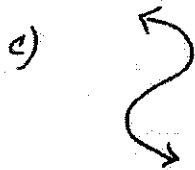
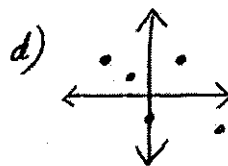
④ Find the simple interest for an investment of \$10,000 at 8% for 4 years.

⑤ Find the amount of compound interest earned on an investment of \$6,000 at 10% for 3 years if interest is compounded annually. State the final value of the investment.

chapter 8 Review

① Are the following relations functions?

a) $\{(-2, 4), (6, 8), (3, -1), (7, 8)\}$



② Evaluate each function using the given value.

$$f(x) = x^2 + 2x + 5$$

a) $f(0)$

b) $f(-3)$

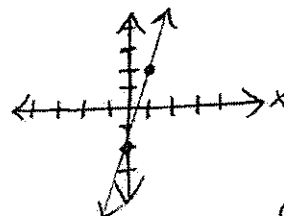
③ For the arithmetic sequence state the common difference, write an equation, and find the 100th term.

$$18, 21, 24, 27, 30, \dots$$

④ Graph the line for the equation $y = 3x + 2$

⑤ Find the slope of a line containing points $(-8, 2)$ and $(-6, 6)$.

⑥ Find the slope of the graphed line.



⑦ State the slope and y-intercept for the graph of the equation.

a) $y = \frac{1}{2}x + 4$

$m =$

$b =$

b) $2x + y = 6$

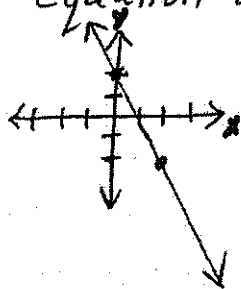
$m =$

$b =$

⑧ Write an equation for the line with slope $\frac{2}{9}$ and y-intercept -4 .

⑨ Write an equation for the line that passes through $(8, 5)$ and $(6, 4)$.

⑩ Write the equation of the line with the given graph.



⑪ Solve the system of equations by graphing

$$x + y = 2$$

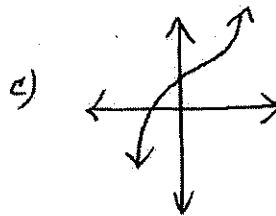
$$y = \frac{1}{2}x - 1$$

chapter 9 Review

- ① state whether the following functions are linear or nonlinear.

a) $y = 2x + 9$

b) $y = 3x^2$



- ② State whether the parabola will curve up or down and whether it has a maximum or minimum value. Then graph. $y = x^2 - 5$

- ③ Graph the cubic function using at least 5 ordered pairs. $y = x^3 - 7$

- ④ Graph the exponential function using at least 5 ordered pairs. $y = 2^x + 1$

- ⑤ Write the prime factorization for $-120a^3b^2$

- ⑥ Find the GCF: $24m^2n$
 $56mn^2$

Graph paper provided on the back of page 9.

⑦ Find each product. Express using exponents.

a) $n^7 \cdot n^2 \cdot n^9$

b) $5^4 \cdot 5^8 \cdot 5$

⑧ Find each quotient.

a) $\frac{x^{40}}{x^{10}}$

b) $\frac{y^7}{y}$

c) $\frac{40a^2b^9}{10ab^2}$

⑨ Write each expression using only positive exponents.

a) $\frac{c^{-6}}{d^{-3}}$

b) $\frac{1}{x^{-4}}$

⑩ Simplify each expression.

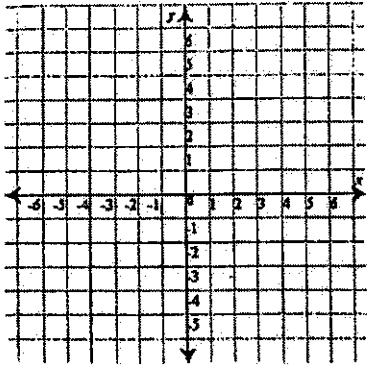
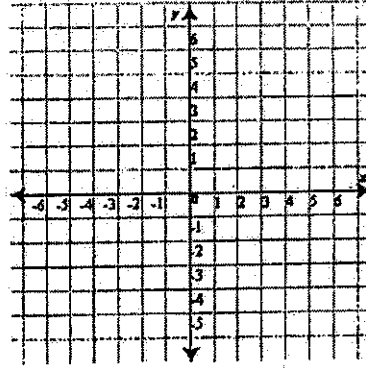
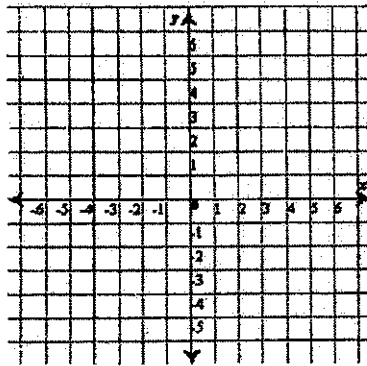
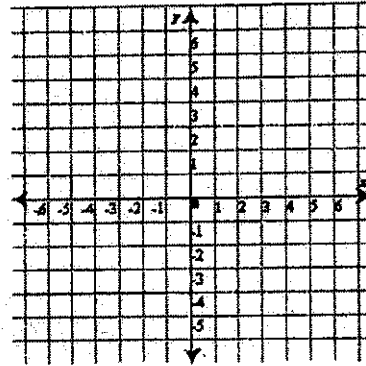
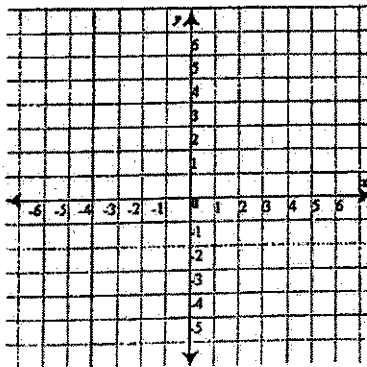
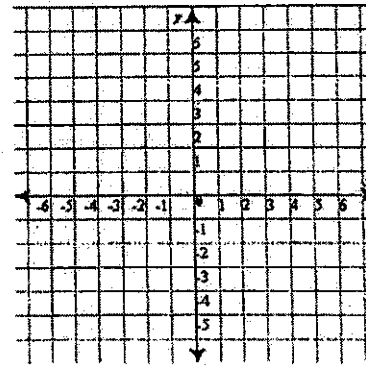
a) $(x^4)^7$

b) $(3a^4b^5)^2$

⑪ Write each number in scientific notation.

a) 64,500,000,000

b) 0.000079



Chapter 10 Review

Name _____

① Complete the following formulas:

a) Distance formula $d = \sqrt{\quad}$

b) Pythagorean Theorem _____

c) Triangle Sum Property _____

② Find each square root.

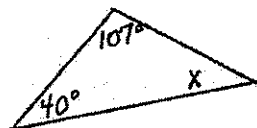
a) $\sqrt{121}$

b) $\sqrt{36}$

c) $-\sqrt{225}$

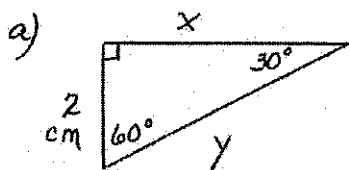
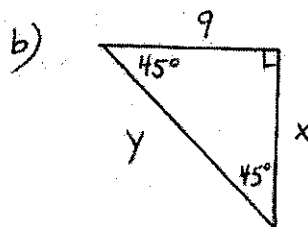
d) $\pm\sqrt{64}$

③ Find the missing measure:



④ Find the measure of all angles of the triangle having the following extended ratio of angle measures:
 $1:3:5$

⑤ Find the missing lengths for the 45° - 45° - 90° triangle and the 30° - 60° - 90° triangle.

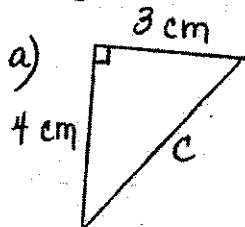
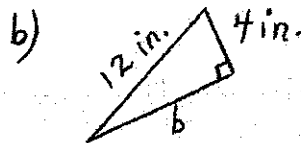


⑥ Use the Distance Formula to find the distance between each pair of points. (Round to the nearest whole #.)

a) $(2, 9), (3, 6)$

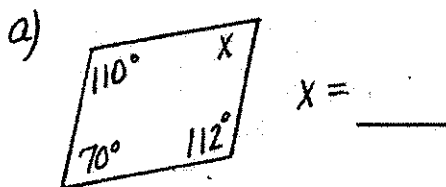
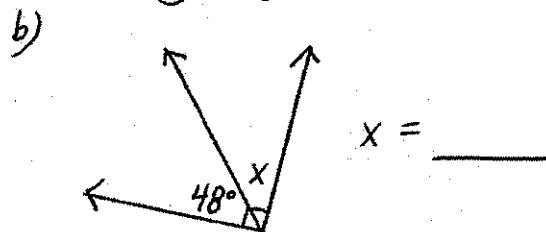
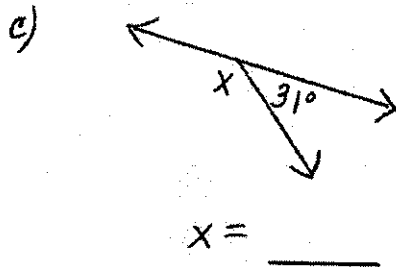
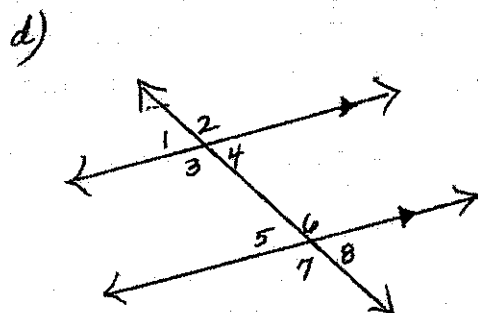
b) $(0, -4), (5, 1)$

⑦ Use the Pythagorean Theorem to find the missing length for each right triangle. (Round to the nearest whole #.)



chapter 11 Review

① Find the measure of each missing angle measure.



② Refer to the diagram in (d) above. Name a pair of each type of angles.

- a) vertical angles $\underline{\hspace{2cm}}$
- b) alternate interior angles $\underline{\hspace{2cm}}$
- c) alternate exterior angles $\underline{\hspace{2cm}}$
- d) corresponding angles $\underline{\hspace{2cm}}$

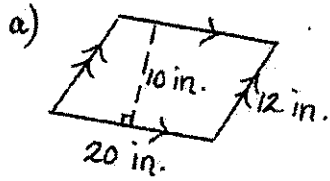
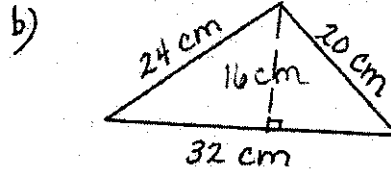
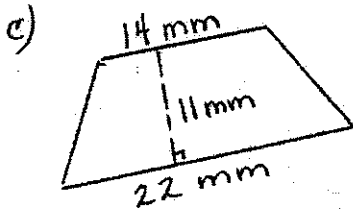
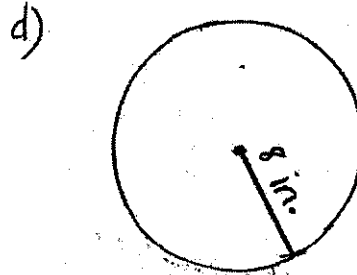
$m\angle 1 = 60^\circ$
 $m\angle 2 = \underline{\hspace{2cm}}$
 $m\angle 3 = \underline{\hspace{2cm}}$
 $m\angle 4 = \underline{\hspace{2cm}}$
 $m\angle 5 = \underline{\hspace{2cm}}$
 $m\angle 6 = \underline{\hspace{2cm}}$
 $m\angle 7 = \underline{\hspace{2cm}}$
 $m\angle 8 = \underline{\hspace{2cm}}$

③ Find the sum of the measures of the interior angles for each polygon and state the measure of each angle.

a) Regular hexagon

b) Regular decagon

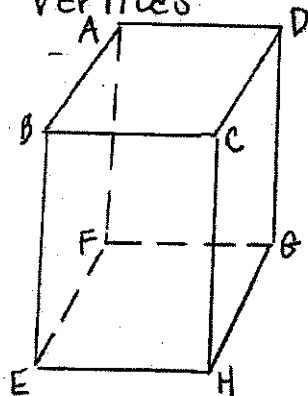
④ Find the area of each figure below :



⑤ Find the Circumference of the circle with radius = 6 cm.

Chapter 12 Review

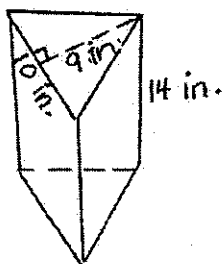
- ① Name the solid. State the bases, faces, edges, and vertices.



Name _____
 Bases _____
 Faces _____
 Edges _____
 Vertices _____

- ② Find the area of the base of each solid and find the Volume.

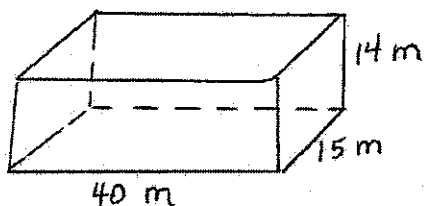
a)



Area of base = _____

Volume = _____

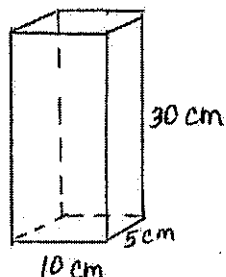
b)



Area of base = _____
 (Bottom)

Volume = _____

- ③ Find the lateral area and surface area of the solid.



Lateral Area = _____

Surface Area = _____

chapter 13

- ① Use the set of data below to calculate the requested statistics.

$\{100, 82, 75, 88, 94, 80, 94, 83, 90, 85\}$

a) mode

b) median

c) mean

~~d) IQR~~

~~e) UQ~~

f) range

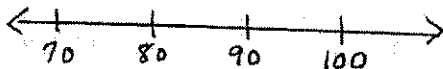
~~g) interquartile range~~

~~h) 5 # summary~~

- ② Draw a stem-and leaf plot and a ~~box-and-whisker~~ plot for #1 above

a) stem-and-leaf

~~b) box-and-whisker~~



- ③ A die is rolled. Compute the following probabilities and odds as indicated.

a) $P(5)$

b) $P(\text{even } \#)$

c) $P(\text{multiple of } 3)$

d) $P(\text{not } 2)$

~~e) odds in favor of a # less than 3~~

~~f) odds against getting 4~~

chapter 13 cont.

④ Use the Fundamental Counting Principle to find the total number of possible outcomes.

a) A coin is flipped three times

$$\underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad} = \underline{\quad}$$

b) A baseball player has two team jerseys, two pairs of pants, and three hats.

$$\underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad} = \underline{\quad}$$

c) A car is offered in 4 exterior colors and 3 interior colors.

$$\underline{\quad} \cdot \underline{\quad} = \underline{\quad}$$

d) A multiple choice quiz contains 4 questions with 3 options for each question.

$$\underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad} \cdot \underline{\quad} = \underline{\quad}$$

⑤ Calculate the following permutations & combinations.

a) $P(10, 3)$

b) $C(7, 4)$

c) How many ways can 3 students be chosen for president, vice president, & secretary from a class of 20 students?

d) 4 students will be chosen from a group of 30 to represent the 7th grade class. How many outcomes are possible?

chapter 14

① Add the following polynomials.

a) $(5x^2 + 6x + 7) + (3x^2 - 4x - 2)$

b) $(7y^2 - 4y - 2) + (-3y^2 + 4y + 6)$

② Subtract the following polynomials.

a) $(11m^2 + 6m - 2) - (3m^2 - 2m + 6)$

b) $(4mn + 6n + 3) - (2mn - n)$