

Name: Answer Key

Math 7 Review: Packet #1

Topic #1: Integers and Absolute Value

Directions: Find each sum, difference, product, or quotient.

1. $-18 + 34 = \boxed{16}$

2. $14 - |23| = \boxed{-9}$

3. $-7 + (-12) = \boxed{-19}$

4. $-6 \times |-4| = \boxed{-24}$

5. $\frac{-36}{3} = \boxed{-12}$

6. $-3 \cdot |-25| = \boxed{-75}$

7. After a blizzard the amount of snow on the ground melted by 3 inches one day and then another 8 inches the next day. Write an expression that represents the total change in the amount of snow on the ground over the two days.

$-3 + -8 = \boxed{-11 \text{ inches}}$

8. A scuba diver descended at a rate of 8 feet per second for one minute. What was her total change in elevation over that period of time?

$-8 \cdot 60 = \boxed{-480 \text{ feet}}$

9. A gopher dug a burrow 6 feet below ground. He came up 2 feet to find food, then dug back down another 8 feet. How many feet below ground is he?

$-6 + 2 + -8 = -4 + -8 = -12$

$\boxed{12 \text{ feet below ground}}$

Topic #2: Fraction Operations

10. $-\frac{11}{12} + \frac{2}{3}$

$= -\frac{11}{12} + \frac{8}{12}$

$= \frac{-3}{12} = \boxed{-\frac{1}{4}}$

11. $3\frac{1}{2} + 4\frac{2}{5}$

$\frac{7}{2} + \frac{22}{5}$

$\frac{35}{10} + \frac{44}{10} = \boxed{\frac{79}{10}} \quad (7\frac{9}{10})$

12. $6\frac{3}{8} - 2\frac{5}{6}$

$\frac{51}{8} - \frac{17}{6}$

$\frac{153}{24} - \frac{68}{24} = \boxed{\frac{85}{24}} \quad (3\frac{13}{24})$

13. $-\frac{5}{3} \times 1\frac{1}{4}$

$-\frac{5}{3} \cdot \frac{5}{4}$

$= \boxed{-\frac{25}{12}} \quad (-2\frac{1}{12})$

14. $-5\frac{3}{5} \div -\frac{1}{7}$

$-\frac{28}{5} \div -\frac{1}{7}$

$= \frac{28}{5} = \boxed{\frac{4}{5}}$

15. $\frac{32}{9} \div 4$

$\frac{32}{9} \cdot \frac{1}{4}$

$\frac{32}{36} = \boxed{\frac{8}{9}}$

16. Scott filled his gas tank up with $19\frac{5}{9}$ gallons of gas. If he uses $1\frac{5}{6}$ gallons of gas each day, after how many days will he need to refill his tank?

$19\frac{5}{9} \div 1\frac{5}{6} = \frac{176}{9} \div \frac{11}{6} = \frac{176}{9} \cdot \frac{6}{11}$

$= \frac{32}{3} = 10\frac{2}{3}$

$\boxed{10 \text{ days}}$

17. Mia has $4\frac{1}{5}$ inches of red yarn and $2\frac{3}{4}$ inches of blue yarn. How many inches of yarn does she have?

$$4\frac{1}{5} + 2\frac{3}{4} = \frac{21}{5} + \frac{11}{4} = \frac{84}{20} + \frac{55}{20} = \frac{139}{20} = 6\frac{19}{20} \text{ inches}$$

Topic #3: Exponents, Roots and Scientific Notation

Directions: Complete the chart below.

	Expanded Notation	Exponential Expression	Value
18.	$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$	3^5	243
19.	$4 \cdot 4 \cdot 4 \cdot 4$	4^4	256
20.	$(-6) \cdot (-6) \cdot (-6)$	$(-6)^3$	-216
21.	$\frac{3}{5} \cdot \frac{3}{5} \cdot \frac{3}{5}$	$(\frac{3}{5})^3$	$\frac{27}{125}$

Topic #4: Fraction, Decimal, and Percent Conversions

Directions: Complete the chart below.

	Fraction	Decimal	Percent
36.	$\frac{11}{50}$	.22	22%
37.	$\frac{7}{50}$	.14	14%
38.	$\frac{8}{10}$	0.8	80%
39.	$\frac{24}{20}$	1.2	120%

Directions: Evaluate each expression. Give your answer as a fraction in simplest form.

40. $\frac{5}{6} \times 0.42$ $\frac{5}{6} \times \frac{21}{50} = \boxed{\frac{7}{20}}$	41. $-2.8 - (-6\frac{5}{8})$ $-\frac{14}{5} + \frac{53}{8} = \frac{-112}{40} + \frac{265}{40} = \boxed{\frac{153}{40}} (3\frac{33}{40})$	42. $(1.75 - \frac{4}{5}) \cdot \frac{2}{3}$ $(\frac{7}{4} - \frac{4}{5}) \cdot \frac{2}{3} = \frac{19}{20} \cdot \frac{2}{3} = \boxed{\frac{19}{30}}$
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Directions: Evaluate each expression. Give your answer as a decimal.

43. $-\frac{3}{4} \cdot 0.16$

$-0.75 \cdot 0.16$

$= \boxed{-0.12}$

44. $0.76 \div \frac{1}{4}$

$0.76 \div 0.25$

$= \boxed{3.04}$

45. $-2\frac{1}{2} - 0.78$

$-2.5 - 0.78$

$= \boxed{-3.28}$

46. Jorge has one dog who weighs $51\frac{1}{5}$ pounds and another dog who weighs 18.3 pounds. How much heavier is the first dog?

$51\frac{1}{5} - 18.3 = 51.2 - 18.3 = \boxed{32.9 \text{ pounds heavier}}$

Topic #6: Order of Operations

Directions: Simplify.

55. $5^2 + 80 \div (2^3) \times 5$

$25 + 80 \div 8 \times 5$

$25 + 10 \times 5$

$25 + 50$

$\boxed{75}$

56. $-14 + \frac{(2^3 \times 6)}{4}$

$-14 + \frac{8 \times 6}{4}$

$-14 + \frac{48}{4}$

$-14 + 12 = \boxed{-2}$

57. $\frac{(-6)^2 + 32 \div 2^4}{\sqrt{4}}$

$\frac{36 + 32 \div 16}{2}$

$\frac{36 + 2}{2} = \boxed{19}$

Topic #7: Properties

Commutative Property

Order doesn't matter when adding or multiplying

Inverse Property

Use opposites to cancel out the original number

Associative Property

Grouping doesn't matter when adding or multiplying

Property of Zero

A number multiplied by zero is always zero.

Identity Property

Keeps the value of the original number.

Distributive Property

Multiply a value to an expression in parentheses.

Directions: Name the property that justifies each statement.

58. $-5(4x + 5) = -20x - 25$

Distributive Property

59. $x^2 \cdot (y^2 \cdot z^2) = (y^2 \cdot z^2) \cdot x^2$

Commutative Property

60. $6 + (7 + 9) = (6 + 7) + 9$

Associative Property

61. $-m^3 + 0 = -m^3$

Identity Property

62. What is the multiplicative inverse of -45?

$-\frac{1}{45}$

63. What is the additive identity of 16?

0

64. What is the additive inverse of 6?

-6

65. What is the multiplicative identity of $\frac{1}{2}$?

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Math 7 Review: Packet #2

Topic #1: Expressions

Directions: Evaluate each expression given the variable replacements.

1. $(a^2 + b) + 4ab$ ($a = 4, b = -3$) $(4^2 - 3) + 4(4)(-3)$ $(16 - 3) + (-48)$ $13 - 48 = \boxed{-35}$	2. $5r^2 - 2rs^2$ ($r = -5, s = 6$) $5(-5)^2 - 2(-5)(6)^2$ $5(25) - 2(-5)(36)$ $125 + 360$ $= \boxed{485}$	3. $(z + 6)^3 + x$ ($x = -8, z = 6$) $(6 + 6)^3 + (-8)$ $12^3 - 8$ $1728 - 8 = \boxed{1720}$
4. $p(pm + p)$ ($p = 2, m = \frac{2}{5}$) $2(2 \cdot \frac{2}{5} + 2)$ $2(\frac{4}{5} + 2)$ $2(\frac{14}{5}) = \boxed{\frac{28}{5}} (5\frac{3}{5})$	5. $4h^2 - j $ ($h = 3$ and $j = -9$) $4(3)^2 - -9 $ $4(9) - 9$ $36 - 9 = \boxed{27}$	6. $ -17 - (x + y)^2$ ($x = 14, y = -20$) $17 - (14 - 20)^2$ $17 - (-6)^2$ $17 - 36 = \boxed{-19}$

Directions: Simplify each expression.

7. $4(-3x + 5)$ $\boxed{-12x + 20}$	8. $3m + 8 - 6m + 1 - m$ $\boxed{-4m + 9}$	9. $9v - (5 - 10v) + 8$ $9v - 5 + 10v + 8$ $\boxed{19v + 3}$
10. $-2(x - 3) + \frac{3}{2}(-4x + 10)$ $-2x + 6 - 6x + 15$ $\boxed{-8x + 21}$	11. $-10 + \frac{3}{4}(16r - 4) + 9r$ $-10 + 12r - 3 + 9r$ $\boxed{21r - 13}$	12. $4(-p + 4) - (5p + 3)$ $-4p + 16 - 5p - 3$ $\boxed{-9p + 13}$

Topic #2: Equations

Directions: Solve each equation. Check all solutions.

13. $x + 8 = -27$ $-8 \quad -8$ $\boxed{x = -35}$	14. $n + \frac{7}{15} = -\frac{8}{15}$ $-\frac{7}{15} \quad -\frac{7}{15}$ $n = -\frac{15}{15}$ $\boxed{n = -1}$	15. $-\frac{2}{3}b = -\frac{17}{12}$ $b = -\frac{17}{12}(-\frac{3}{2})$ $\boxed{b = \frac{17}{8}}$
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16. $-5x + 8 = 53$ $-5x = 45$ $x = -9$ $-5(-9) + 8 = 53$ $45 + 8 = 53$ $53 = 53 \checkmark$	17. $\frac{w-9}{2} = -3$ $w-9 = -6$ $w = 3$ $\frac{3-9}{2} = -3$; $\frac{-6}{2} = -3$; $-3 = -3 \checkmark$	18. $-9 = -8 + \frac{r}{21}$ $-1 = \frac{r}{21}$ $r = -21$ $-9 = -8 + \frac{-21}{21}$ $-9 = -8 - 1$ $-9 = -9 \checkmark$	
19. $6(6-6a) = 108$ $36 - 36a = 108$ $-36a = 72$ $a = -2$ $6(6+12) = 108$ $6(18) = 108$ $108 = 108 \checkmark$	20. $3-7c+3c = -17$ $3-4c = -17$ $-4c = -20$ $c = 5$ $3-35+15 = -17$ $-17 = -17 \checkmark$	21. $214 = -3 + 7(-1+8s)$ $214 = -3 - 7 + 56s$ $214 = -10 + 56s$ $224 = 56s$ $s = 4$ $214 = -3 + 7(-1+32)$ $214 = -3 + 217$ $214 = 214 \checkmark$	
22. $-2(1+2d) = 28+d$ $-2-4d = 28+d$ $-2 = 28+5d$ $-30 = 5d$ $-6 = d$ $-2(1-12) = 28-6$ $-2(-11) = 28-6$ $22 = 22 \checkmark$	23. $-(1+4m) = 3(2-m)+4$ $-1-4m = 6-3m+4$ $-1-4m = 10-3m$ $-1-m = 10$ $-m = 11$ $m = -11$ $-(1+44) = 3(13)+4$ $-45 = 43 \checkmark$	24. $7(k+4) = -1+8(k+2)$ $7k+28 = -1+8k+16$ $7k+28 = 8k+15$ $28 = k+15$ $13 = k$ $7(13+4) = -1+8(13+2)$ $7(17) = -1+8(15)$ $119 = 119 \checkmark$	
Directions: Translate each equation. Do not solve.			
25. "a number decreased by fourteen is six" $n-14 = 6$	26. "the quotient of a number and negative two is five" $\frac{n}{-2} = 5$		
27. "the difference of twice a number and eight is ten" $2n-8 = 10$	28. "12 more than one-fourth of a number is 3" $\frac{1}{4}n + 12 = 3$		
Directions: For each problem, define a variable and set up an equation, then solve.			
29. Vince has a dog washing business. He washed 8 dogs and earned a total of \$119.92. How much does he charge per dog? let x = each dog $\frac{8x}{8} = \frac{119.92}{8}$ $x = 14.99$	30. Mel paid for three-fourths of the cost of a cake and Gretchen paid the rest. If Mel paid \$21, how much did Gretchen pay? let x = total cost $\frac{3}{4} \cdot \frac{3}{4}x = 21 \cdot \frac{4}{3}$ $x = 28$ Mel = \$21 ; Gretchen = \$7		
Equation	Solution	Equation	Solution
$8x = 119.92$	\$14.99	$\frac{3}{4}x = 21$	\$7

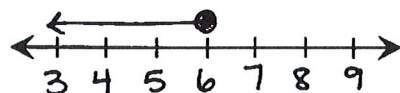
31. Ella ate half of her gummy bears before adding thirteen more to the bowl. If she now has 25 gummy bears, how many did she start with? let $x =$ gummy bears $\frac{1}{2}x + 13 = 25$ $\frac{1}{2}x = 12$ $x = 24$	32. Maggie spent \$16 at the movies. She purchased one ticket for \$5.50 and packs of candy for \$1.75 each. How many packs of candy did she buy? let $x =$ packs of candy $5.50 + 1.75x = 16$ $1.75x = 10.5$ $x = 6$
Equation $\frac{1}{2}x + 13 = 25$	Equation $5.50 + 1.75x = 16$
Solution 24 gummy bears	Solution 6 packs of candy

Topic #3: Inequalities

Directions: Translate each inequality. Graph your solution on the number line.

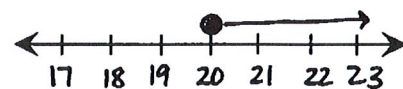
33. "A number is at most six."

$$x \leq 6$$



34. "Twenty is no less than a number."

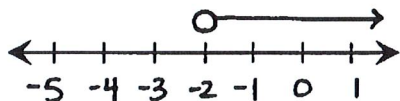
$$x \geq 20$$



Directions: Solve each inequality. Graph your solution on the number line.

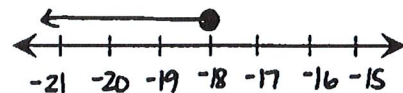
35. $b - 6 > -8$

$$b > -2$$



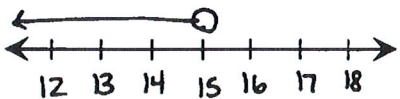
36. $3 \leq \frac{x}{-6}$

$$-18 \geq x \rightarrow x \leq -18$$



37. $-180 < -12r$

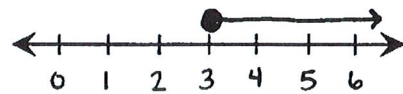
$$15 > r \rightarrow r < 15$$



38. $-10 + 6y \geq 8$

$$6y \geq 18$$

$$y \geq 3$$



39. Select all values of m that make the inequality below true.

$$-2m + 7 \leq 35$$

$$-2m \leq 28$$

$$m \geq -14$$

☐ -18

☐ -16

☒ -14

☒ -12

☒ -10

40. Select all values of c that make the inequality below true.

$$\frac{1}{2}c - 4 < 6$$

$$\frac{1}{2}c < 10$$

$$c < 20$$

☒ 17

☒ 18

☒ 19

☒ 20

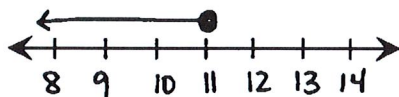
☐ 21

Directions: Translate each inequality. Graph your solution on the number line.

41. "Eleven times a number is no more than one hundred twenty one."

$$11n \leq 121$$

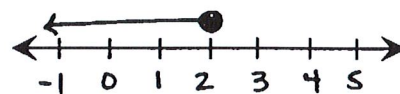
$$n \leq 11$$



42. "Negative four is at least six less than a number."

$$-4 \geq n - 6$$

$$2 \geq n \rightarrow n \leq 2$$

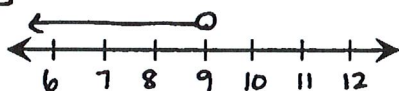


43. "The sum of negative two and nine times a number is less than seventy nine."

$$-2 + 9n < 79$$

$$9n < 81$$

$$n < 9$$

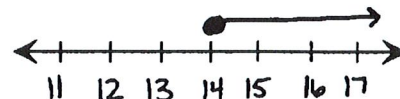


44. "The sum of a number and one, divided by five is greater than or equal to three."

$$\frac{n+1}{5} \geq 3$$

$$n+1 \geq 15$$

$$n \geq 14$$



Directions: Define a variable and set up an inequality, then solve.

45. Dana is shopping for clothes. She wants to buy a pair of shorts for \$12 and plans to spend the rest on \$7.50 tank tops. How many tank tops can she buy if she wants to spend less than \$42?

x = tank tops

$$12 + 7.5x < 42$$

$$7.5x < 30$$

$$x < 4$$

46. Liz makes and sells necklaces. It costs her \$40 for the supplies to make 50 necklaces. How much must she sell each one for in order to make a profit of at least \$250?

$$50x - 40 \geq 250$$

$$50x \geq 290$$

$$x \geq 5.8$$

let x = each necklace cost

Inequality

$$12 + 7.5x < 42$$

Solution

At most 4

Inequality

$$50x - 40 \geq 250$$

Solution

At least \$5.80/necklace

47. Shelly wants to earn at least \$500 this week. She made \$45 babysitting and earns \$12.50 per hour at a grocery store. How many hours does she need to work at the grocery store to meet her goal?

let x = hours worked

$$45 + 12.5x \geq 500$$

$$12.5x \geq 455$$

$$x \geq 36.4$$

48. Nick charges \$55 per hour for surfing lessons plus a \$30 registration fee. If Mrs. Smith doesn't want to pay more than \$470, what is the maximum number of hours she can take lessons for?

let x = hours of lessons

$$55x + 30 \leq 470$$

$$55x \leq 440$$

$$x \leq 8$$

Inequality

$$45 + 12.5x \geq 500$$

Solution

At least 37 hours

Inequality

$$55x + 30 \leq 470$$

Solution

At most 8 hours

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Math 7 Review: Packet #3

Topic #1: Ratios and Rates

Use for questions 1-3: A zoo has 6 tigers, 8 lions and 16 cheetahs in the big cat exhibit.
Find each ratio and give your answer in simplest form.

1. tigers to cheetahs

$$\frac{6}{16} = \boxed{\frac{3}{8}}$$

2. cheetahs to lions

$$\frac{16}{8} = \boxed{\frac{2}{1}}$$

3. lions to the total number of animals in the exhibit

$$\frac{8}{30} = \boxed{\frac{4}{15}}$$

Find each unit rate. Round to the nearest tenth or cent when necessary.

4. Wesley worked for 32 hours last week and earned a total of \$409.60. How much does he make per hour?

$$\frac{409.60}{32} = 12.8$$

$$\boxed{\$12.80/\text{hr}}$$

5. The Morris family drove 368.5 miles in 5.5 hours. Find their average rate of speed.

$$\frac{368.5}{5.5} = 67$$

$$\boxed{67 \text{ mi/hr}}$$

Topic #2: Proportional Relationships

Solve the following proportions.

6. $\frac{b}{10} = \frac{5}{8}$

$$8 \cdot b = 5 \cdot 10$$

$$\frac{8b}{8} = \frac{50}{8}$$

$$\boxed{b = 6.25}$$

$$(\frac{25}{4})$$

7. $\frac{5}{2} = \frac{8}{n}$

$$5 \cdot n = 2 \cdot 8$$

$$\frac{5n}{5} = \frac{16}{5}$$

$$\boxed{n = 3.2}$$

$$(\frac{16}{5})$$

8. $\frac{6}{5} = \frac{x}{7}$

$$5 \cdot x = 6 \cdot 7$$

$$\frac{5x}{5} = \frac{42}{5}$$

$$\boxed{x = 8.4}$$
 $(\frac{42}{5})$

9. Travis spent \$9.84 on 8 pounds of watermelon. How much would he spend on 15 pounds of watermelon?

$$\frac{9.84}{8} = \frac{x}{15}$$

$$\frac{8x}{8} = \frac{147.6}{8}$$

$$\boxed{x = \$18.45}$$

10. A bag of grass seed weighs 7 pounds and covers 2,800 square feet. If Mark's backyard is 6,000 square feet, how many pounds of grass seed will he need?

$$\frac{7}{2800} = \frac{x}{6000}$$

$$\frac{2800x}{2800} = \frac{42000}{2800}$$

$$\boxed{x = 15 \text{ lb}}$$

11. Deanna is making cookies. She needs $2\frac{1}{3}$ cups of sugar to make 3 dozen cookies. If she has 8 dozen cookies to make, how many cups of sugar will she need?

$$\frac{2\frac{1}{3}}{3} = \frac{x}{8}$$

$$3x = \frac{13}{6} \cdot 8$$

$$3x = \frac{52}{3}$$

$$x = \frac{52}{9} = \boxed{5\frac{7}{9} \text{ cups}}$$

12. Anna enlarged a photo to hang over her fireplace. The new photo is 47.2 inches wide. If the original photo was 3.6 inches tall and 5.9 inches wide, what is the height of the new photo?

$$\frac{3.6}{5.9} = \frac{x}{47.2}$$

$$\frac{5.9x}{5.9} = \frac{169.92}{5.9}$$

$$\boxed{x = 28.8 \text{ in}}$$

Topic #3: Scale Drawings and Models

13. The park and the movie theater are 3.4 inches apart on a map. If the map has a scale of 0.25 inch = 5 miles, find the actual distance between the park and movie theater.

$$\frac{0.25}{5} = \frac{3.4}{x}$$

$$\frac{0.25x}{.25} = \frac{17}{.25}$$

$$x = 68 \text{ mi}$$

14. A construction company has built a scale model of a new building. The model was built using a scale of 3 inches = 32 ft. If the building is expected to be 200 feet tall, how tall is the model?

$$\frac{3}{32} = \frac{x}{200}$$

$$\frac{32x}{32} = \frac{600}{32}$$

$$x = 18.75 \text{ inches}$$

15. Emma and Ellie are twins and their birth weight can be compared using a scale of 0.75 pounds:0.9 pounds. If Emma weighed 6.4 pounds at birth, how much did Ellie weigh?

$$\frac{0.75}{0.9} = \frac{6.4}{x}$$

$$\frac{0.75x}{.75} = \frac{5.76}{.75}$$

$$x = 7.68 \text{ lb}$$

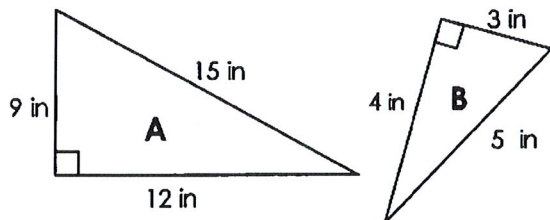
16. Ben drew plans for a new garage. On the plans, the garage is 6.4 inches long. If the actual garage will be 18 feet long, what was the scale used to create the drawing?

$$\frac{6.4 \text{ in}}{18 \text{ ft}} = \frac{1}{2.8125}$$

$$1 \text{ in} = 2\frac{13}{16} \text{ ft}$$

Topic #4: Similar Figures and Indirect Measurement

Use the similar figures below for questions 17-18.



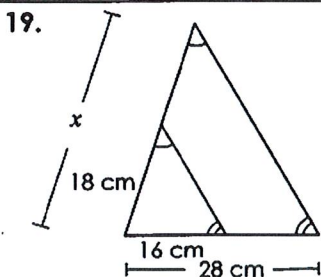
17. Give the scale factor of Figure A to Figure B.

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

18. Give the scale factor of Figure B to Figure A.

$$\frac{5}{15} = \frac{1}{3}$$

If the figures below are similar, find the value of x .

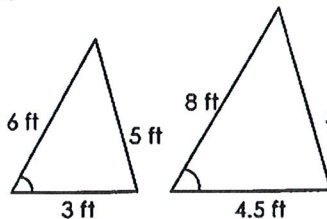


$$\frac{18}{16} = \frac{x}{28}$$

$$\frac{16x}{16} = \frac{504}{16}$$

$$x = 31.5 \text{ cm}$$

20.



$$\frac{5}{x} = \frac{3}{4.5}$$

$$\frac{3x}{3} = \frac{22.5}{3}$$

$$x = 7.5$$

Use the given information to find each measure. Round to the nearest hundredth if necessary.

21. A rosebush is 2 feet tall and casts a shadow that is 7 feet long. The bush is planted next to a tree that is 8.5 feet tall. How long of a shadow is cast by the tree?

$$\frac{2}{7} = \frac{8.5}{x}$$

$$\frac{2x}{2} = \frac{59.5}{2}$$

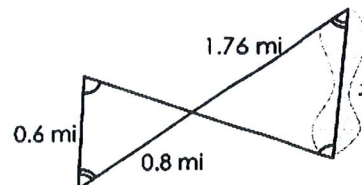
$$x = 29.75 \text{ ft}$$

22. Find the distance across the lake.

$$\frac{0.6}{x} = \frac{0.8}{1.76}$$

$$0.8x = 1.056$$

$$x = 1.32 \text{ mi}$$



Topic #5: Percents

Round to the nearest hundredth if necessary.

23. Find 4% of 725

$$\frac{4}{100} = \frac{x}{725}$$

$$100x = 2900$$

$$x = 29$$

24. 14 is what percent of 70?

$$\frac{x}{100} = \frac{14}{70}$$

$$70x = 1400$$

$$x = 20$$

25. 28 is 35% of what number?

$$\frac{35}{100} = \frac{28}{x}$$

$$35x = 2800$$

$$x = 80$$

26. Of the total students at Martin Middle School, 224 students are picked up by their parent at dismissal. If this is 28% of the total number of students, how many students are at Martin Middle School altogether?

$$\frac{28}{100} = \frac{224}{x}$$

$$\frac{28x}{28} = \frac{22400}{28}$$

$$x = 800 \text{ students}$$

27. On Monday, Kacie completed 40% of the total miles she wanted to run for the week. If she wanted to run 20 miles during the week, how many miles did she run on Monday?

$$\frac{40}{100} = \frac{x}{20}$$

$$\frac{100x}{100} = \frac{800}{100}$$

$$x = 8 \text{ mi}$$

28. Theater tickets are marked down 15%. How much are the tickets if they originally cost \$55?

$$\frac{15}{100} = \frac{x}{55}$$

$$\frac{100x}{100} = \frac{825}{100}$$

$$x = 8.25$$

$$55 - 8.25 = \$46.75$$

29. Andrew has a coupon for 30% off his purchase at an electronics store. If he buys a \$199 television, how much does he pay?

$$\frac{30}{100} = \frac{x}{199}$$

$$\frac{100x}{100} = \frac{5970}{100}$$

$$x = 59.7$$

$$199 - 59.7 = \$139.30$$

30. A new robotic toy was selling for \$24 before it became very popular. The store raised the price by 25%. What was the cost of the toy after the markup?

$$24(.25) = 6$$

$$24 + 6 = \$30$$

31. Manny buys a new grill that costs \$375. The grill is discounted 22% and sales tax is 6.5%. How much does Manny pay for the grill?

$$375(.22) = 82.50$$

$$375 - 82.50 = 292.50$$

$$292.50(.065) = 19.01$$

$$292.50 + 19.01 = \$311.51$$

32. Pam bought a pair of shoes on sale for \$22.40. If this was 20% off the original price, find the original price of the shoes.

$$\frac{.80x}{.80} = \frac{22.40}{.80}$$

$$x = \$28$$

33. Shelly buys a dining room table that costs \$950. The store has discounted the table 30%. She has a 25% off coupon to use after the store discount. How much does Shelly pay for the table?

$$950(.30) = 285$$

$$950 - 285 = 665$$

$$665(.25) = 166.25$$

$$665 - 166.25 = \$498.75$$

34. Melanie earns 3.5% commission on each house she sells. If she just sold a \$420,000 house, how much did she earn? $420000(.035) = \boxed{\$14,700}$	35. Xavier earns a 15% commission on each washing machine he sells. Last week he sold four \$450 machines. How much did he earn? $4(450) = 1800$ $1800(.15) = \boxed{\$270}$
36. Beth purchased her car for \$18,400. Three years later the car was worth \$15,200. Find the percent change in the value of her car. $\frac{15200 - 18400}{18400} = \frac{-3200}{18400} \approx -.17$ $\boxed{17\% \text{ decrease}}$	37. Darren works at a sporting goods store. Last week he sold 62 pairs of soccer cleats. This week he sold 80 pairs of soccer cleats. What is the percent change in the amount soccer cleats sold? $\frac{80 - 62}{62} = \frac{18}{62} \approx .29$ $\boxed{29\% \text{ increase}}$

Topic #6: Simple Interest

Solve each problem. Round to the nearest tenth or cent when necessary.

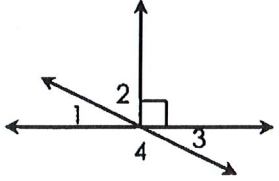
38. Mary put \$12,600 in an account with a simple interest rate of 2.2%. Find the amount of interest earned at the end of 10 years. $I = 12600(.022)(10)$ $= \boxed{\$2,772}$	39. Chris borrowed \$25,000 from the bank to build a swimming pool at a simple interest rate of 9%. If he took 12 years to pay the loan, how much did he pay in total? $I = 25000(.09)(12)$ $= 27000$ $\boxed{\\$52,000}$
40. Carmen put \$500 in an account with a simple interest rate of 1.75%. When she withdrew the money, she had earned \$78.75 in interest. How long did she leave the money in the account? $78.75 = 500(.0175) x$ $\frac{78.75}{8.75} = \frac{8.75 x}{8.75}$ $\boxed{x = 9 \text{ years}}$	41. Robin borrowed \$9,500 to furnish a new house. The bank charged her a simple interest rate of 4.5%. By the time she paid the loan in full, she had paid a total of \$12,065. How long did it take Robin to pay off her loan? $12065 - 9500 = 2565 \text{ (interest)}$ $2565 = 9500(.045) x$ $2565 = 427.5 x$ $x = 6$ $\boxed{6 \text{ yrs}}$
42. Nathan bought a new computer for \$875. He financed it through the computer store for 3 years. He paid a total of \$131.50 in interest. What was the simple interest rate on the loan? $131.50 = 875(x)(3)$ $\frac{131.50}{2625} = \frac{2625 x}{2625}$ $.05 = x$ $\boxed{5\%}$	43. Hank put \$850 in an account for his daughter when she was born. When he withdrew the money 18 years later there was a total of \$1,370.20 in the account. What was the simple interest rate? $520.2 = 850(x) 18$ $520.2 = 15300 x$ $.034 = x$ $\boxed{3.4\%}$

Name: _____

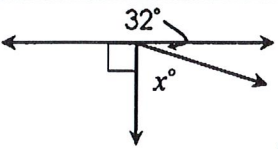
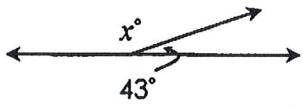
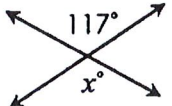
Math 7 Review: Packet #5

Topic #1: Angle Relationships

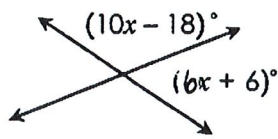
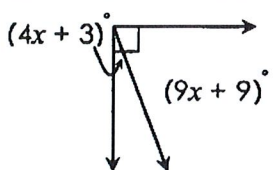
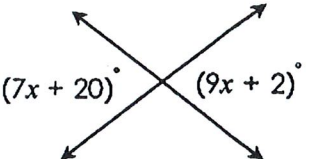
Using the diagram below, classify the angle pair as vertical, adjacent, complementary, supplementary, or congruent angles. Use all names that apply.

1. 	a) $\angle 1$ and $\angle 2$ Adjacent, Complimentary	b) $\angle 1$ and $\angle 3$ Vertical, Congruent
	c) $\angle 3$ and $\angle 4$ Adjacent, Supplementary	d) $\angle 1$ and $\angle 4$ Adjacent, Supplementary
2. $\angle P$ and $\angle Q$ are supplementary angles. If $m\angle Q = 72^\circ$, find $m\angle P$. $180 - 72 = 108^\circ$	3. $\angle R$ and $\angle S$ are complementary angles. If $m\angle R = 14^\circ$, find $m\angle S$. $90 - 14 = 76^\circ$	

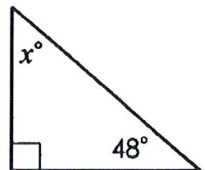
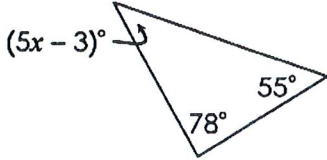
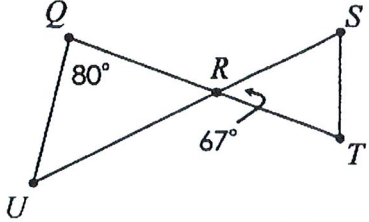
Find each measure.

4.  58°	5.  137°	6.  117°
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Find the value of x .

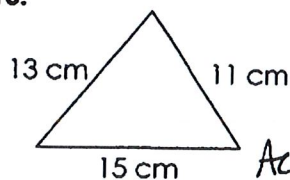
7.  $10x - 18 + 6x + 6 = 180$ $16x - 12 = 180$ $16x = 192$ $x = 12$	8.  $4x + 3 + 9x + 9 = 90$ $13x + 12 = 90$ $13x = 78$ $x = 6$	9.  $7x + 20 = 9x + 2$ $18 = 2x$ $x = 9$
---	---	--

Topic #2: Triangles

10. Find the value of x.  $x + 90 + 48 = 180$ $x = 42^\circ$	11. Find the value of x.  $5x - 3 + 78 + 55 = 180$ $5x + 130 = 180$ $5x = 50$ $x = 10$	12. Find $m\angle QUR$.  $180 - 80 - 67 = 33^\circ$
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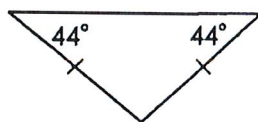
Classify each triangle by its angles and sides.

13.



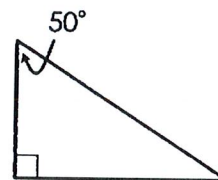
Acute,
scalene

14.



obtuse,
isosceles

15.

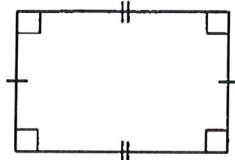


Right,
scalene

Topic #3: Quadrilaterals and Polygons

Classify each figure using all names that apply.

19.



- ☒ Quadrilateral
- ☐ Trapezoid
- ☐ Isosceles Trapezoid
- ☐ Parallelogram
- ☒ Rectangle
- ☐ Rhombus
- ☐ Square

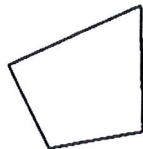
20.



- ☒ Quadrilateral
- ☒ Trapezoid
- ☒ Isosceles Trapezoid
- ☐ Parallelogram
- ☐ Rectangle
- ☐ Rhombus
- ☐ Square

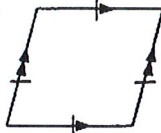
Classify each figure using the name that best describes it.

21.



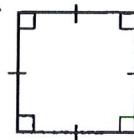
Quadrilateral

22.



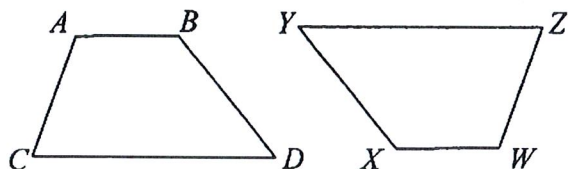
Rhombus

23.



Square

24. If trapezoid $ABCD \cong$ trapezoid $WXYZ$, identify the congruent parts.



$$\angle A \cong \angle W$$

$$\overline{XY} \cong \overline{BC}$$

$$\angle B \cong \angle X$$

$$\overline{YZ} \cong \overline{CD}$$

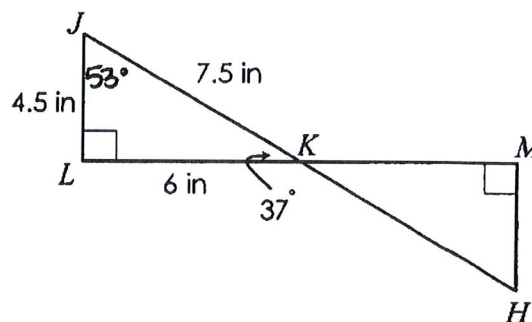
$$\angle C \cong \angle Y$$

$$\overline{WZ} \cong \overline{AD}$$

$$\angle D \cong \angle Z$$

$$\overline{XW} \cong \overline{BA}$$

25. If $\triangle JKL \cong \triangle HKM$, find each measure.



$$m\angle H = 53^\circ$$

$$HM = 4.5 \text{ in}$$

$$m\angle M = 90^\circ$$

$$HK = 7.5 \text{ in}$$

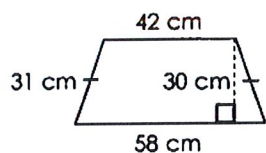
$$m\angle K = 37^\circ$$

$$MK = 6 \text{ in}$$

Topic #5: Area and Perimeter of Plane Figures

Find the perimeter and area of each figure.

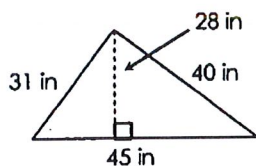
38.



$$P = 42 + 2(31) + 58$$

$$A = \frac{1}{2}(30)(42 + 58)$$

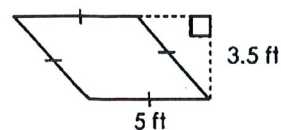
39.



$$P = 31 + 40 + 45$$

$$A = \frac{1}{2}(28)(45)$$

40.

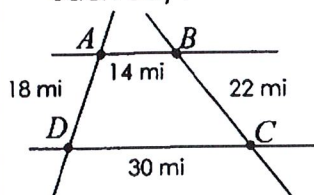


$$P = 4(5)$$

$$A = 3.5(5)$$

Perimeter	Area	Perimeter	Area	Perimeter	Area
162 cm	1500 cm ²	116 in	630 in ²	20 ft	17.5 ft ²

41. Anne is a bus driver and drives the route from points A to B to C to D and back to A again six times a day. How many miles does she drive each day?

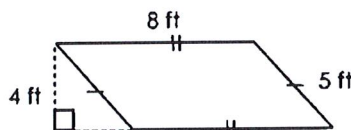


$$P = 14 + 22 + 30 + 18$$

$$= 84$$

$$6(84) = \boxed{504 \text{ mi}}$$

42. Chris is covering a window with a decorative adhesive film to filter light. The film costs \$2.35 per square foot. How much will the film cost?



$$A = 8(4) = 32$$

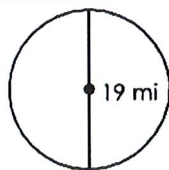
$$32(2.35)$$

$$= \boxed{\$75.20}$$

Topic #6: Circumference and Area of Circles

Find the circumference and area of each figure.

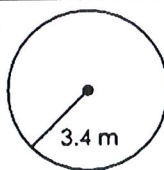
43.



$$C = 2(3.14)(9.5)$$

$$A = (3.14)(9.5)^2$$

44.

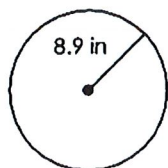


$$C = 2(3.14)(3.4)$$

$$A = 3.14(3.4)^2$$

Circumference	Area	Circumference	Area
59.66 mi	283.385 mi ²	21.352 m	36.2984 m ²

45. A blacksmith is bending metal rods to create handmade basketball hoops. How long of a metal rod is needed to make the hoop below?



$$C = 2(3.14)(8.9)$$

$$= 55.892 \text{ in}$$

46. Patty had a new sprinkler system installed with sprinklers that spray water 5.5 feet in each direction as they rotate in a circular motion. If she has 6 sprinklers in her backyard, how much grass will be watered if no sprinkler zones overlap?

$$A = 3.14(5.5)^2$$

$$= 94.985 \text{ ft}^2$$

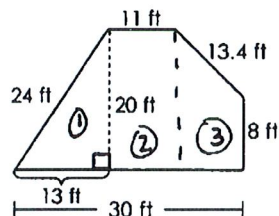
$$94.985 (6) = 569.91 \text{ ft}^2$$

Topic #7: Perimeter and Area of Composite Figures

Find the perimeter and area of each composite figure. Use 3.14 for pi when necessary.

Figure	Perimeter	Area
47.	$P = 2(6.7) + 4.8 + 4.8 + 6.7 + 12$ $P = 41.7 \text{ in}$	$A_1 = 6.7(6.5)$ $= 43.55$ $A_2 = \frac{1}{2}(5.3)(11)$ $= 29.15$ $A = 72.7 \text{ in}^2$
48.	$P = 13.5 + 2(11.4) + \frac{1}{2}[2(3.14)(3.5)] + 6.5$ $P = 53.79 \text{ mi}$	$A_1 = 9(13.5) = 121.5$ $A_2 = \frac{1}{2}(3.14)(3.5)^2$ $= 19.2325$ $A = 140.7325 \text{ mi}^2$
49.	$P = 47 + 2(16.5) + \frac{1}{2}(2(3.14)(14))$ $P = 123.96 \text{ cm}$	$A_1 = \frac{1}{2}(13.6)(28 + 47)$ $= 510$ $A_2 = \frac{1}{2}(3.14)(14)^2$ $= 307.72$ $A = 817.72 \text{ cm}^2$

50. Rebecca is putting down new flooring in the first level of her house. If the flooring costs \$0.85 per square foot, how much will it cost?



$$A_1 = \frac{1}{2}(13)(20) = 130$$

$$A_2 = 11(20) = 220$$

$$A_3 = \frac{1}{2}(6)(20 + 8) = 84$$

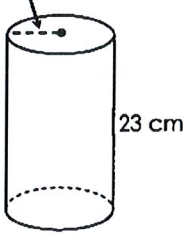
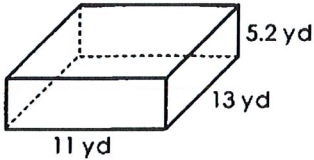
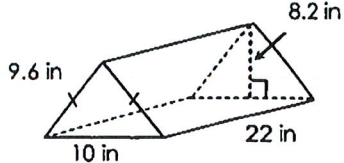
$$A = 434 \text{ ft}^2$$

$$434(0.85)$$

$$= \$368.90$$

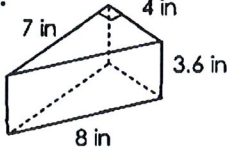
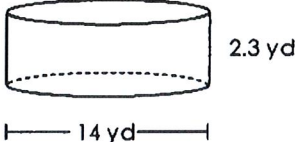
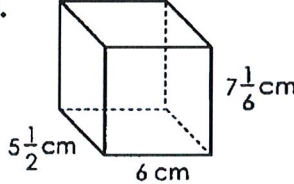
Topic #8: Surface Area and Volume of Prisms and Cylinders

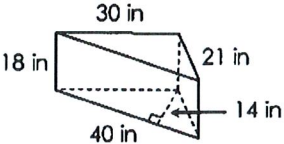
Find the surface area of each figure. Use 3.14 for pi when necessary.

51. 5.2 cm  $SA = 2(3.14)(5.2)^2 + 2(3.14)(5.2)(23)$	52.  $SA = 2(11)(5.2) + 2(11)(13) + 2(13)(5.2)$	53.  $SA = 2(0.5)(8.2)(10) + 2(9.6)(22) + 10(22)$
Surface Area: 920.8992 cm²	Surface Area: 535.6 yd²	Surface Area: 724.4 in²

54. A cupcake company designed cylindrical boxes for their new cake pops. How much material is needed to make three boxes if each is 5 inches tall and has a radius of 0.75 inches? $SA = 2(3.14)(0.75)^2 + 2(3.14)(0.75)(5)$ $= 27.0825 \text{ in}^2$ $3(27.0825) = \boxed{81.2475 \text{ in}^2}$	55. A fish tank is in the shape of a rectangular prism. The tank is 18 inches wide, 12 inches deep and 23 inches tall. How many square inches of glass was used to make the tank if there is no top? $SA = 2(23)(18) + 2(23)(12) + 2(18)(12)$ $= \boxed{1812 \text{ in}^2}$
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Find the volume of each figure. Use 3.14 for pi when necessary.

56.  $V = \frac{1}{2}(7)(4)(3.6)$	57.  $V = (3.14)(7)^2(2.3)$	58.  $V = (5.5)(6)(7.1\bar{6})$
Volume: 50.4 in³	Volume: 353.878 yd³	Volume: 236.5 cm³

59. Manuel just bought a corner aquarium. He purifies the water by using 3 drops of a conditioning product for every 48 cubic inches of water. How many drops will he need? $V = \frac{1}{2}(40)(14)(18)$ $= 5040 \text{ in}^3$  $\frac{3}{48} = \frac{x}{5040}$ $x = 315 \text{ drops}$	60. The Avery family just had an above ground pool installed. The pool is 6 feet deep and has a diameter of 22 feet. If the cost to fill the pool is \$6.25 per 100 cubic feet, find the total spent to fill it to the top. $V = 3.14(11)^2(6) = 2279.64 \text{ ft}^3$ $\frac{6.25}{100} = \frac{x}{2279.64}$ $x = \\$142.48$
--	--

Name: _____

Math 7 Review: Packet #6

Topic #1: Theoretical and Experimental Probability

1. A number from 0-9 is chosen at random 80 times. The results are shown in the table.

Result	0	1	2	3	4	5	6	7	8	9
Frequency	6	9	8	10	7	8	9	7	11	5

a) What is the theoretical probability of choosing the number 3?

$$\frac{1}{10}$$

b) Based on the experiment, what is the probability of choosing the number 3? Compare this to the previous answer.

$$\frac{10}{80} = \frac{1}{8} ; \text{higher than expected}$$

2. Theoretically, if a number is chosen 500 times, how many times would you expect a number greater than 5?

$$\frac{4}{10} = \frac{x}{500}$$

$$2000 = 10x$$

$$\boxed{200 = x}$$

3. Based on this experiment, if a number is chosen 500 times, how many times would you expect a number greater than 5? Compare this to the previous answer.

$$\frac{32}{80} = \frac{x}{500}$$

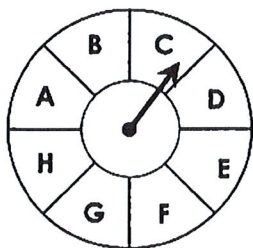
$$80x = 16000$$

$$\boxed{x = 200 \text{ times}}$$

equal to theo. prob.

Topic #2: Tree Diagrams & The Counting Principal

4. The spinner below is spun once and a coin is flipped. Draw a tree diagram to show all possible outcomes.



$$\begin{array}{c} A \\ \wedge \\ H \quad T \end{array}$$

$$\begin{array}{c} B \\ \wedge \\ H \quad T \end{array}$$

$$\begin{array}{c} C \\ \wedge \\ H \quad T \end{array}$$

$$\begin{array}{c} D \\ \wedge \\ H \quad T \end{array}$$

$$\begin{array}{c} E \\ \wedge \\ H \quad T \end{array}$$

$$\begin{array}{c} F \\ \wedge \\ H \quad T \end{array}$$

$$\begin{array}{c} G \\ \wedge \\ H \quad T \end{array}$$

$$\begin{array}{c} H \\ \wedge \\ H \quad T \end{array}$$

5. List the sample space:

{AH, AT, BH, BT, CH, CT, DH, DT, EH, ET, FH, FT, GH, GT, HH, HT}

6. What are the total number of outcomes?

16 outcomes

Use the fundamental counting principal for questions 7-8.7. A letter from the word **PERSONALITY** and a card from a standard deck are chosen at random. How many outcomes are possible?

$$11 \cdot 52 = 572 \text{ outcomes}$$

8. Mark is getting a smoothie. He can choose from three sizes, nine fruit flavors and three different juices. How many smoothie outcomes are possible?

$$3 \cdot 9 \cdot 3 = 81 \text{ outcomes}$$

Topic #3: Compound Probability

9. A letter from the word **PENNSYLVANIA** is chosen at random, then a standard die is rolled. Find each probability.

a) $P(L, \text{ then odd})$

$$\frac{1}{12} \cdot \frac{3}{6} = \boxed{\frac{1}{24}}$$

b) $P(N, \text{ then less than 4})$

$$\frac{3}{12} \cdot \frac{3}{6} = \boxed{\frac{1}{8}}$$

a) $P(\text{a vowel, then at least 3})$

$$\frac{4}{12} \cdot \frac{4}{6} = \boxed{\frac{2}{9}}$$

10. There are 8 red, 12 blue, 10 yellow, and 6 green marbles in a bag. A marble is chosen at random, replaced, then another is chosen. Find each probability.

a) $P(\text{red, then green})$

$$\frac{8}{36} \cdot \frac{6}{36} = \boxed{\frac{1}{27}}$$

b) $P(\text{not red, then blue})$

$$\frac{28}{36} \cdot \frac{12}{36} = \boxed{\frac{7}{27}}$$

c) $P(\text{both yellow})$

$$\frac{10}{36} \cdot \frac{10}{36} = \boxed{\frac{25}{324}}$$

Topic #4: Using Samples to Predict

11. A health center in a small town wants to survey people about their exercise habits. Determine whether the samples below would be biased or unbiased. Explain.

a) 75 random people at the gym

Biased - only asking people that work out

b) calling every 20th person listed in the town directory

Unbiased - random

c) 200 people seated in a movie theater

biased - large enough sample, but could be not random in age

12. A school surveyed a random group of students to determine their favorite school lunch. Results are shown below.

Result	Frequency
Pizza	15
Burgers	25
Hot dogs	12
Sandwiches	20
Salad	8

a) What percent of the students reported pizza as their favorite?

$$\frac{15}{80} = 0.1875$$

$$\boxed{18.75\%}$$

b) What percent of the students reported burgers or sandwiches as their favorite?

$$\frac{45}{80} = 0.5625$$

$$\boxed{56.25\%}$$

c) Out of 200 students, how many would you expect to say their favorite lunch is salad?

$$\frac{8}{80} = \frac{x}{200}$$

$$80x = 1600$$

$$\boxed{x = 20}$$

13. A museum surveyed a random group of attendees to determine their favorite exhibit. Results are shown below.

Result	Frequency
Sea Life	10
Ice Age	20
Dinosaurs	22
Reptiles	18

a) What percent of the attendees reported the dinosaurs exhibit as their favorite?

$$\frac{22}{70} \approx .3143$$

$$\boxed{31.43\%}$$

b) What percent of the attendees reported anything other than seal life as their favorite?

$$\frac{60}{70} \approx .8571$$

$$\boxed{85.71\%}$$

c) Out of 500 attendees, how many would you expect to say the reptile exhibit is their favorite?

$$\frac{18}{70} = \frac{x}{500}$$

$$70x = 9000$$

$$\boxed{x \approx 128 \text{ people}}$$

Topic #5: Measures of Central Tendency

Find the mean, median, mode(s), and range for each of the following data sets. Round to the nearest tenth if necessary.

14. The ages of children in a summer art program are listed below.

{8, 7, 8, 12, 13, 9, 10, 11, 12, 7, 8, 10, 12, 9, 9, 11}

$$\text{Mean} = \frac{156}{16} = 9.75$$

$$\text{Med} = 7, 7, 8, 8, 8, 9, 9, 9, 10, 10, 11, 11, 12, 12, 12, 13$$

↑
 $\frac{9+10}{2} = 9.5$

$$\text{Range} = 13 - 7 = 6$$

15. The table shows the number of each type of pizza sold at Pat's Pizzeria yesterday.

Type	Number Sold
Pepperoni	74
Cheese	130
Sausage	80
Veggie	34
Hawaiian	12
Meat Lovers	60
White	10

$$\text{Mean} = \frac{400}{7} \approx 57.1$$

$$\text{Med} = 10, 12, 34, 60, 74, 80, 130$$

↑

$$\text{Mode} = 130 - 10 = 120$$

Mean	Median	Mode(s)	Range	Mean	Median	Mode(s)	Range
9.75	9.5	8, 9, 12	6	57.1	60	No Mode	120

Topic #6: Stem-and-Leaf Plots

16. The stem-and-leaf plot shows the age, in years, of passengers on an airplane.

Passenger Ages

Stem	Leaf
0	1 2 4 5
1	6 8 9
2	0 2 3 7
3	3 5 8 8
4	0 2 4
5	

Key: 0 | 1 = 1 year old

a) Find the mean, median, mode and range.

$$\text{Mean} = \frac{427}{16} \approx 23.72$$

$$\text{Med} = \frac{22+23}{2} = 22.5$$

$$\text{Range} = 44 - 1 = 43$$

$$\text{Mean: } 23.7$$

$$\text{Median: } 22.5$$

$$\text{Mode(s): } 38$$

$$\text{Range: } 43$$

b) How many passengers were over the age of 25?

8 passengers

c) How many passengers were no more than 30 years old?

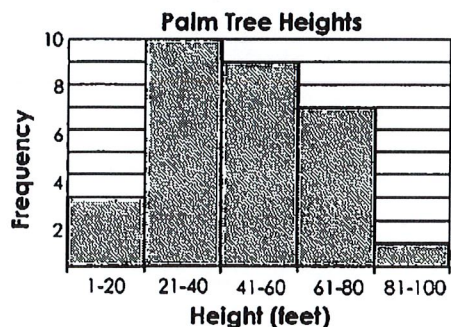
11 passengers

d) How many passengers were between the ages of 20 and 40?

9 passengers

Topic #7: Histograms

17. The histogram below shows the heights of 30 palm trees measured on an island resort. Use the histogram to answer the questions.



a) How many trees are between 41 and 60 feet tall?

9 trees

b) How many trees are at least 21 feet tall?

27 trees

c) What percent of the trees are greater than 60 feet tall?

$$\frac{8}{30} \approx .2667$$

26.67%

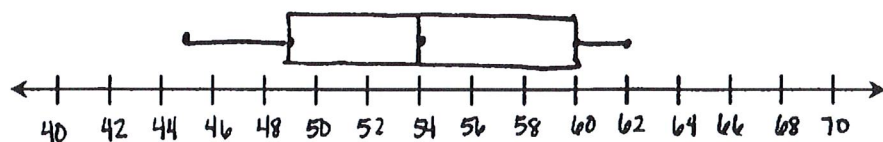
Topic #8: Box-and-Whisker Plots

Find the five-number summary and construct the box-and-whisker plot for each data set.

18. The height (in inches) of 15 children on a soccer team:

{48, 45, 50, 55, 62, 60, 49, 51, 58, 59, 60, 54, 49, 60, 50}

45, 48, 49, 49, 50, 50, 51, 54, 55, 58, 59, 60, 60, 60, 62



Minimum: 45

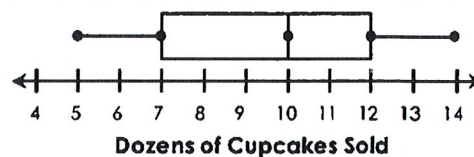
Lower Quartile: 49

Median: 54

Upper Quartile: 60

Maximum: 62

19. The number of dozens of cupcakes sold at Sweetie's Bakery each day over a month is shown on the box-and-whisker plot to the right.



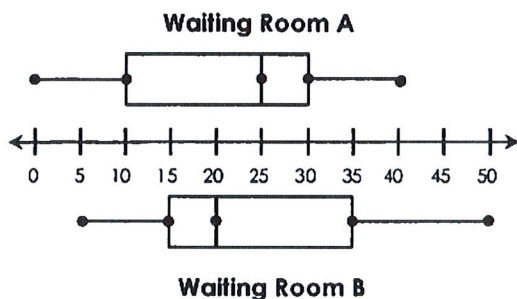
a) What is the interquartile range? 5

b) What percent of the days did they sell more than 7 dozen cupcakes? 75%

c) What percent of the days did they sell between 10 and 14 dozen cupcakes? 50%

d) What percent of days did they sell no more than 7 dozen cupcakes? 25%

20. The waiting time at the emergency room of two different hospitals are shown below.



a) Which waiting room had a greater range in wait times? B, by 5 min

b) What is the difference in the minimum wait time? 5 min

c) What is the difference in the median wait time? 5 min

d) Which group had the longest wait time overall? Explain.

B - Almost every quartile was higher than A's.