5/28/14

2nd semester exam Review 2014
Part 1
Ratios. Rates. and proportions

1. Marie has saved $54. On Wednesday, she spent $3 of her savings. What ratio represents the portion of her total savings that she still has left?
[A] 1:9 [B] 17:18 [C] 15:16 [D] 8:9

$\frac{51}{54} = \frac{17}{18}$

2. Velma needs $4\frac{1}{2}$ feet of fabric to make a costume for a play. How many yards of fabric does she need?

$\frac{3\text{ ft}}{1\text{ yd}} = \frac{4.5\text{ ft}}{x\text{ yd}}$ $3x = 4.5$ $x = 1.5\text{ yd}$

3. Joey is making punch for a birthday party. If the punch requires 15 quarts of juice, how many gallons does it require?

$\frac{4\text{ qt}}{1\text{ g}} = \frac{15\text{ qt}}{x\text{ g}}$ $4x = 15$ $x = 3.75\text{ g}$

4. If 12 inches represents 2 feet in an architectural model. How tall would the actual building be if the model is 42 inches tall?

$\frac{12\text{ in}}{2\text{ ft}} \quad \frac{42\text{ in}}{x\text{ ft}}$ 7ft

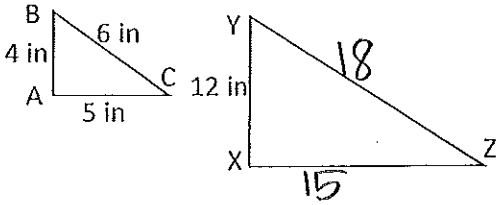
5. If twenty-one pounds of tomatoes cost $84 dollars, how much would 18 pounds cost at the same rate?

$\frac{\$84}{21\text{ lb}} = \frac{\$x}{18\text{ lb}}$

6. Tommy bought 5 pounds of assorted chocolates for $9.65. At this rate, how much would 3 pounds of assorted chocolates cost?

$\frac{\$9.65}{5\text{ lbs}} = \frac{\$x}{3\text{ lbs}}$

7. Triangle ABC is similar to triangle XYZ. Find the perimeter of triangle XYZ.



A 12 inches B 18 inches
C 15 inches (D) 45 inches

8. The distance between San Rafael and Novato is 20 miles. What would the distance in inches be between the two towns on a map if the maps scale is:
0.75 inches = 5 miles.

$\frac{15\text{ in}}{5\text{ mi}} = \frac{x\text{ in}}{20\text{ mi}}$ ×4

A 2.5 inches (B) 3 inches
C 25 inches D 100 inches

9. $\frac{5}{6} = \frac{t}{18}$ $t = 15$ ×3

10. $\frac{6}{k} = \frac{24}{28}$ ×1 $k = 7$ ×4

11. $\frac{21}{5} = \frac{c}{7}$ $5c = 21 \cdot 7$ $c = 29.4$

12. $\frac{15}{w} = \frac{2}{5}$ $15 \cdot 5 = 2w$ $\frac{75}{2} = \frac{2w}{2}$ $w = 37.5$

13. $\frac{3}{n} = \frac{2.7}{18}$ ×10 $n = 2$ ×10

14. $\frac{0.2}{3} = \frac{3}{d}$ $\frac{.2d}{.2} = \frac{9}{.2}$ $d = 45$

15. Reagan is having a party this weekend. She can buy soda in 2 liter bottles or three liter bottles. The two-liter of soda costs $1.78, and the three-liter soda costs $2.55. Which is the better buy?

A The 2-Liter B The 3-Liter

C The 1-Liter D They're the same

16. Kimberly bought 4 notebooks for $6.32. At the same unit price, how much would she pay for 5 notebooks?

A $1.58 B $790

C $7.90 D $7.00

17. Tito wants to buy some peanut butter to donate to the local food pantry. If Tito wants to save as much money as possible, which brand should he buy?

Brand	Sale Price
A) Nutty	12 ounces for $2.19
B) Grandma's	18 ounces for $2.79
C) Bee's	28 ounces for $4.69
D) Save-A-Lot	40 ounces for $6.60

18. Lexi painted 3 faces in 12 minutes at the Arts and Crafts fair. At this rate, how many faces can she paint in 40 minutes?

19. Franco drove 150 miles in 1.5 hours. At this rate, how long will it take him to drive another 25 miles to the next town.

20. A snake can slither about 20.5 feet in 4 minutes. At this speed, how far can it travel in one hour?

A 1230 feet B 5.125 feet

C 307.5 feet D 82 feet

21. The Grove sells three types of muffins. Apple Crisp are 3 for $2.40, Chocolate Chip are 5 for $5.15, and Blueberry are 12 for $7.32. Which type of muffin is the best buy?

UNIT RATE!

A Apple Crisp B Chocolate Chip

C Blueberry D None

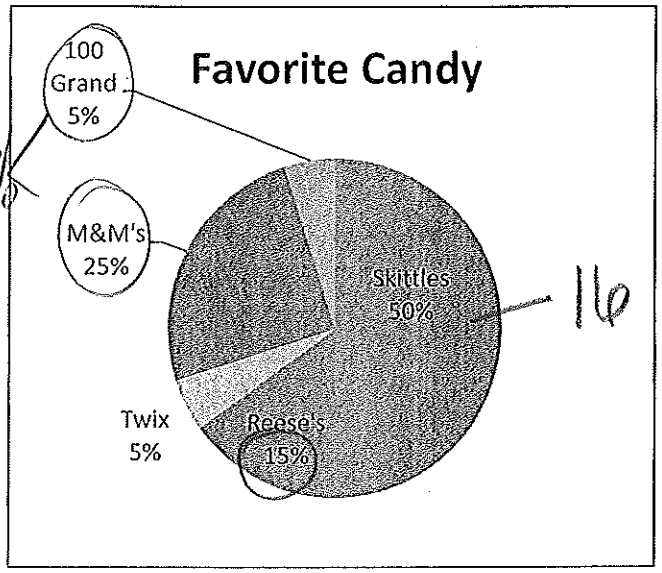
See # 15!

22. Each week Jackson drinks three 200mL bottles of Gatorade. How many liters of Gatorade does he each week?

A 60 liters B 0.6 liters C 0.2 liters D20 liters

2nd semester exam Review 2014
part 2
percents

1. The graph represents the favorite candy of the total 32 students in Miss Levy's 7th period. Which statement is best supported by the graph?



A More students like Reese's than M&M's and 100 Grand's combined.

B Exactly 8 students say M&M's are their favorite candy. $\frac{8P}{32W} = \frac{25}{100} \left(\frac{1}{4}\right)$

C Less than 16 students say Skittles are their favorite. Exactly!

D The difference between the number of students that say M&M's are their favorite and the number that say Reese's are the favorite is 10

2. There are 24 students in Jake's class who have brown eyes. This represents the 75% of the students in the class. How many students are there in Jake's class?

A 36 B 30 C 18 D 32 $\frac{24P}{32W} = \frac{75}{100}$

3. There were 72 light bulbs delivered to the hardware store last week. If 12.5% of the light bulbs were delivered on Monday, how many light bulbs were delivered on Monday?

A 24 B 9 C 3.5 D 900 $\frac{9P}{72W} = \frac{12.5}{100}$

4. Dondra is buying a cell phone that has a regular price of $150. The cell phone is on sale for 25% off the regular price. What is the ***sale price*** of the cell phone?

A $37.50 B $25.00
C $187.50 D $112.50

$\frac{37.5P}{150W} = \frac{25}{100}$

$150 - 37.50 = 112.50$

5. Montana earned $50 doing chores around the house for one month. She wants to buy a new pair of shoes that cost $48 with 8% tax. How much more will she need to buy the shoes?

A $86.40 B $3.84
C $51.84 D $1.84

See #10

$14.50 + 35 = 49.50$

6. You go to the mall and want to buy a shirt for $14.50 and a pair of jeans for $35. There is a 7.5% sales tax rate on clothing. If you give the sales associate $55, how much change will you receive?

$\frac{3.71P}{49.50W} = \frac{7.5}{100}$

$49.50 + 3.71 = 53.21$

$55 - 53.21 = 1.79$

7. Jonathan wants to purchase a new flat screen TV for his Super Bowl party. He found one at Best Buy that cost $900 but it is on sale 25% off. The sales tax will be 6%. How much will Jonathan pay for his new TV?

~~A $ 225.00~~ discount B $ 715.50
~~C~~ $ 675.00 D $ 40.50 tax
↑ sale price

$\frac{225}{900} = \frac{25}{100}$ $\frac{40.50}{675} = \frac{6}{100}$

$900 - 225 = 675$ $675 + 40.50 = 715.50$

8. In the Stoneridge apartment complex, 25% of the apartments have two bedroom. If there are 18 two-bedroom apartments, what is the total number of apartments at Stoneridge?

A 18 B 4.5
C 180 D 72

$\frac{18\ P}{72\ W} = \frac{25}{100}$

$\times \frac{171\ P}{180\ W} = \frac{95}{100}$

$\frac{9\ P}{180\ W} = \frac{5}{100}$

9. The school year was 180 days. Ricky was present 95% of the days. How many days was Ricky absent?

9 days

$180 - 171 = 9$

10. Ian earned $70 babysitting and wants to buy a skateboard with the money he earned. The price of the skateboard is $68 and the sales tax is 8%. How much more will he need to buy the skateboard?

$68 + 5.44 = 73.44$

$3.44

$\times \frac{5.44\ P}{68\ W} = \frac{8}{100}$

11. The table below shows the price of sandwiches at a local deli. Samantha orders a roast beef sandwich, and Derrick orders a chicken wrap. Tax is 6% and they want to leave a 20% tip. Use estimation to determine how much the total will be.

Sandwich	Cost
Turkey Panini	$7.89
Roast Beef	$7.49
Cheese Melt	$6.29
Chicken Wrap	$6.59

A $ 15 B $ 19
~~C~~ $ 25 D $ 16

≈ 7

≈ 7

$\frac{7}{14}$

$\frac{.84}{14} = \frac{6}{100}$

$14 + 1 = 15$

$15 + 3 = 18$

$\frac{3}{15} = \frac{20}{100}$

12. Fred applied a total of 80 cubic yards of mulch to four different areas in the following amounts.

- 9 cubic yards in the red-rose garden
- 18 cubic yards around the trees
- 32 cubic yards under the swing set
- 21 cubic yards in the yellow-rose garden

What percent of the mulch did Fred apply to the red-rose gardens?

$\frac{9\ P}{80\ W} = \frac{11.25}{100}$

A 11.25% B 0.1125% C 9% D 80%

13. The local chess club has 60 members. Twenty four of those members are younger than twenty. What percent of the members are younger than 20?

(A) 40% ~~B) 50%~~ ~~C) 60%~~ ~~D) 70%~~

less than 1/2!

$\frac{24}{60} = \frac{P}{100}$

$\frac{24}{60} = \frac{40}{100}$

14. Sherry opened up a savings account with $5000 on her 21st birthday. Her balance at the end of last month was $4200. What percent of her money is still in the bank?

A) 82% B) 16% (C) 84 % D) 10%

$\frac{4200}{5000} = \frac{P}{100}$

$\frac{4200}{5000} = \frac{84}{100}$

15. If sales tax is 9%, how much would your final cost be on a shirt that retails for $14.

~~A) $1.26~~ B) $1.56 (C) $15.26 D) $15.56

tax

$\frac{1.26}{14} = \frac{9}{100}$

$14 + 1.26 = 15.26$

16. Craig left the waitress a 20% tip. If Craig's bill was $34.50, how much did he leave for the waitress?

A) $1.73 B) $3.45 C) $2.00 (D) $6.90

$\frac{6.90}{34.50} = \frac{20}{100}$

17. Mark, Paul, and Jeff went to lunch. Their total bill was $46.89, not including sales tax. If sales tax is 7%, how can they find how much each person pays IF they split the bill evenly?

A) Find the sales tax by dividing $46.89 by 0.07. Add that amount $46.89, and then divide the total by 3.

(B) Find the sales tax by multiplying $46.89 by 0.07. Add that amount to $46.89, and then divide the total by 3.

C) Find the sales tax by dividing $46.89 by 0.07. Add that amount to $46.89, and then multiply the total by 3.

D) Find the sales tax by multiplying $46.89 by 0.07. Add that amount to $46.89, and then multiply the total by 3.

$\frac{7}{100} = 0.07$

18. A radio manufacturer says that out of 800 radios produced, 40 are defective. What percent of the radios are **NOT** defective?

~~A) 5%~~ (B) 95% C) 10% D) 90%

$\frac{40}{800} = \frac{5}{100}$

$\frac{760}{800} = \frac{95}{100}$

2nd semester exam Review 2014
Part 3
Statistics and Data Representation

1. The manager of a movie rental store checked the prices at other stores and found the following prices for renting movies. How much should he charge for the mean and the mode to be the same?

A $4.00 B $4.50
C $5.00 D $6.50

Movie Rental Prices	
Store	Price
A	$6.50
B	$4.00
C	
D	$4.50
E	$5.00

2. The number of times Pam worked out using her Wii Fit over 6 consecutive weeks during the school year is shown.

4,6,7,6,2,5

Which statement about Pam's Data is true?
A. The mean is greater than the median.
B. The range is equal to the mean.
C. The range is more than the median.
D. The range is equal to the mode.

3. Mark counted the number of times he text messaged his friends over the weekend. On Saturday he sent 15 messages and on Sunday he only sent 7. Which measure of data can be used to determine the <u>variation</u> in number of text messages per day?

A Mean B Median C Mode D Range

4. Given the following stem and leaf plot of math test score:
Math Test Scores (out of 50 points)

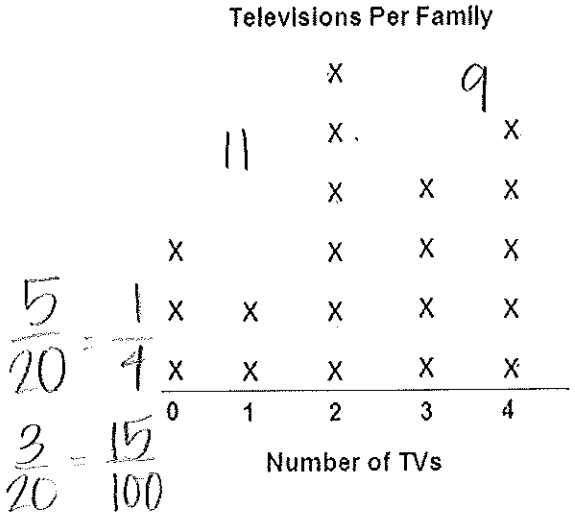
3	5, 6, 8
4	0, 2, 2, 4, 5, 5, 7, 8, 9
5	0, 0, 0

What is the median of the data?
A. 4 B. 5
C. 49 D. 45

5. Which statement below is NOT supported by the information in the line plot?
A. 3 families have no TV's T
B. 50% of the families have either 3 or 4 televisions F
C. $\frac{1}{4}$ of the families have fewer than 2 televisions T
D. 30% of families have no TV's.

$\frac{5}{20} = \frac{1}{4}$

$\frac{3}{20} = \frac{15}{100}$



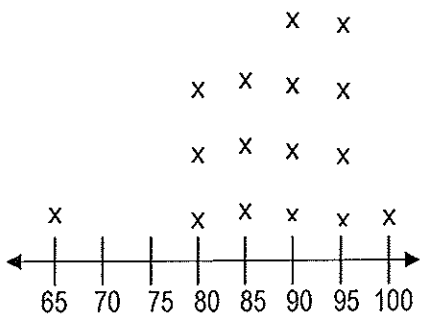
6. The high temperatures for a one-week period are shown. Which of the measures of the data is NOT represented by 70°F?

A. Mean B. Median
C. Mode (D) Range

Temperatures

Day of the Week	High Temperature (°F)
Sunday	75
Monday	70
Tuesday	65
Wednesday	70
Thursday	72
Friday	68
Saturday	70

Mrs. Hudzietz collected the data from her 3rd pd's Homework grades and displayed it using a line plot.



Homework Grades

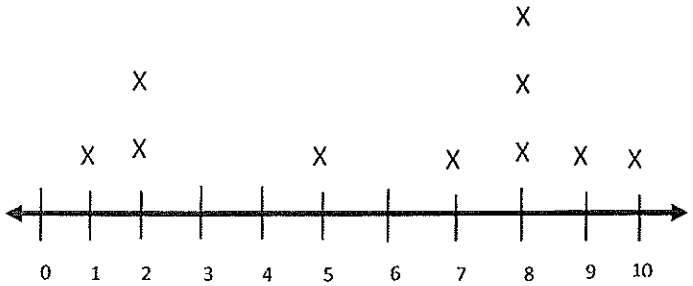
7. What is the range of the scores? 35

8. Without the "outlier", what is the range of the grades? 20

9. What is the median homework grade? 90

10. Mr. Haksell bought 5 Ralph Lauren Polo shirts for $350. Later he bought another for $40. What is the mean cost of all the shirts? $115

11. Using the line plot below, find the mean.



6

12. The number of times Pam worked out using her Wii Fit over 6 consecutive weeks during the school year is shown below.

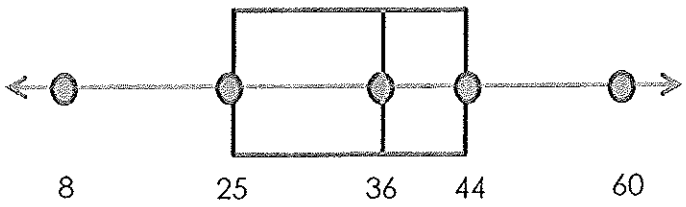
10,8,2,5,6,5,

Which statement about Pam's Data is true?

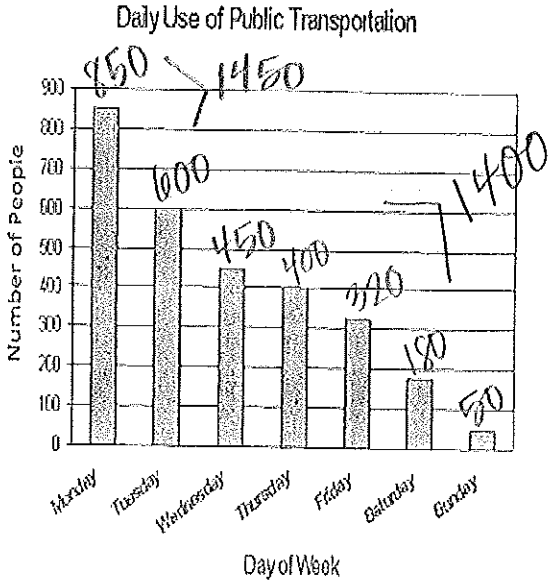
(A.) The mean is greater than the median.
B. The range is equal to the mean.
C. The range is less than the median.
D. The range is equal to the mode.

Use the box plot to determine the following;

13. The Lower Quartile 25
14. The Median 36
15. The Upper Quartile 44
16. The Interquartile Range 19



17. A public transportation company collected the following data concerning the number of people who use public transportation on a regular basis.



Which statement is supported by the data?

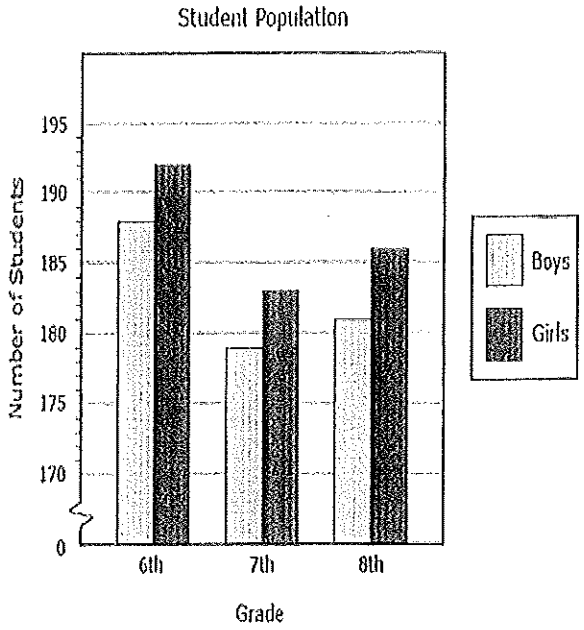
F Twice as many people use public transportation on Monday than on Wednesday.

G The median number of people who use public transportation is 450.

H More people use public transportation on Monday and Tuesday than on all other days of the week.

J The same number of people use public transportation on Saturday and Sunday as on Friday.

18. The graph below shows the number of students in each grade at a middle school.



Which statement is NOT supported by the information in the graph?

F About 1,100 students attend this middle school.

G There are approximately 10 more girls in the 6th grade than in the 7th grade.

H About 400 boys and 400 girls attend this middle school.

J There are approximately 13 more students in 6th grade than in 8th grade at this middle school.

19. The stem-and-leaf plot below shows the number of sit-ups done by students in Ms. Truong's gym class.

Sit-ups

Stem	Leaves						
1	8	8	9				
2	4	4	5	5	8	9	
3	2	2	2	3	4	5	9
4	1	2	2	5	5	5	
5	0	0	0	2	5	5	6

4 | 2 represents 42 sit-ups

Which statement is NOT supported by the data?

A Sixteen students did less than 40 sit-ups.

B Over $\frac{1}{2}$ of the students did more than 40 sit-ups.

C The same number of students did 32 sit-ups as did 50 sit-ups.

D More students did 45 sit-ups than did 55 sit-ups.

2nd semester exam Review 2014
Part 4
Geometric Figures and Measurement

1. Molly measured an angle that measured 53°. What is the measure, in degrees, of an angle that is supplementary to the 53° angle?

A 127° B 37°
C 53° D None of the above

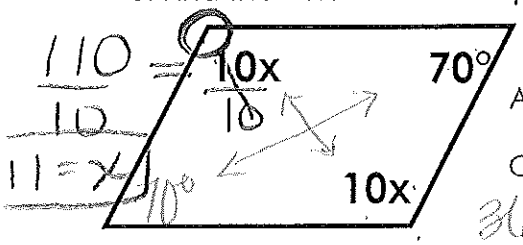
→ sum of 2 or more ∠'s is 180°
complementary = sum of 2 or more ∠'s is 90°

2. A triangle has side lengths of 90mm, 90mm, and 90mm. Which of the following best describes this triangle?

A Right B Equilateral
C Obtuse D Isosceles

Example: 30in, 30in, 15in
isosceles - 2 congruent

3. Find the value of x in the parallelogram below.



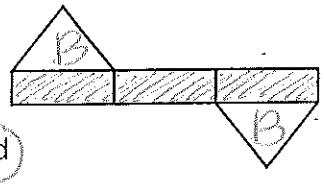
110 = 10x
10 10
11 = x

A 20° B 11°
C 100° D 110°

360° = 140° + 20x
−140 −140
220 = 20x
20 20
11 = x

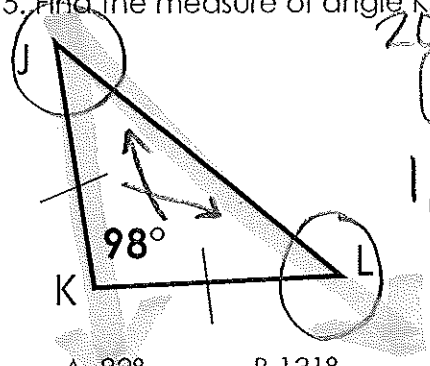
4. Which solid figure can be made from the net shown?

F. Triangular pyramid
G. Triangular prism
H. Rectangular prism
J. Rectangular pyramid



surrounded by Δ's

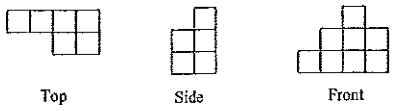
5. Find the measure of angle KJL.



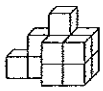
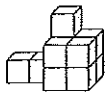
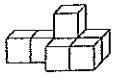
180 = 82 + 98
41 + 41

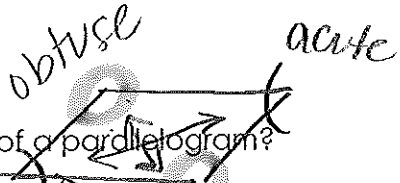
A 82° B 131°
C 41° D 52°

6. The top, front, and side view of a figure are given below.



Which figure matches these views?

A  B  C  D 



7. Which of the following could be the angle measurements of a parallelogram?

A) 80° 60° 80° 60° B) 100° 100° 100° 60° C) 95° 85° 95° 85° D) 70° 110° 100° 60°

2 sets of pairs. 1 - obtuse 1 - acute = 360°

8. A triangle has 2 angles that each measure 45°. Which of the following best describes the triangle?

A) Right Scalene B) Right Isosceles C) Equilateral D) Obtuse Triangle

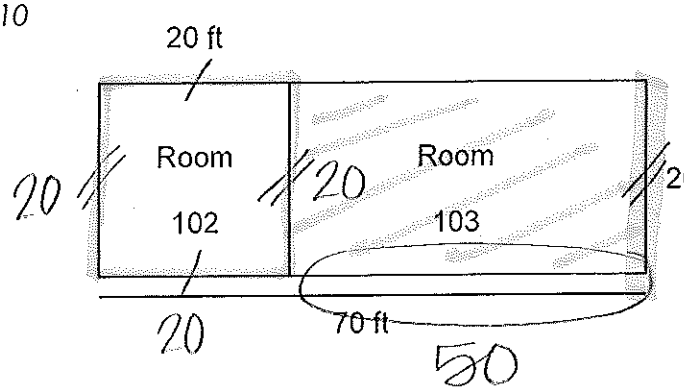
Use the picture of the classrooms for #9-10

9. What is the perimeter of room 102?

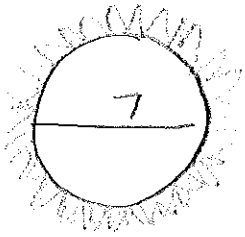
80ft

10. What is the area of room 103?

1000 ft²



11. Ginger picked out a new rug for her living room. She bought a circular rug and wanted to add fringe around the edge of the rug, How much fringe would she need if the diameter of the rug is 7 feet? (Use $\pi = 3.14$)



$C = 2\pi r$

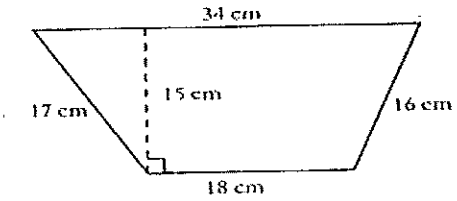
$C = \pi d$

$C = 3.14 \cdot 7$

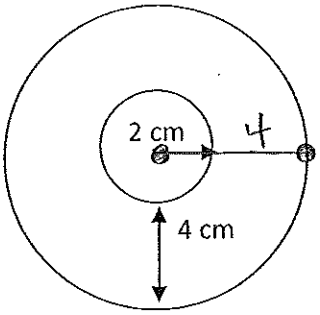
21.98ft

12. What is the area of the trapezoid?

A. 247.5 cm²
B. 390 cm²
C. 612 cm²
D. 780 cm²



13. The drawing shows 2 circles that share a common center point.



Which expression can be used to find the approximate circumference of the outer circle in centimeters?

A $2\pi(2 + 4)$

B $2(2 + 4)$

C $\pi(2 + 4)$

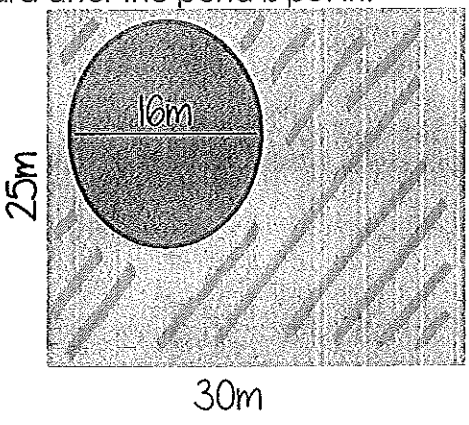
D $\frac{1}{2}(2 + 4)$

$C = 2(r)(\pi)$

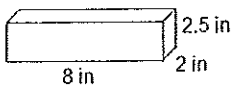
*MATH CHART!

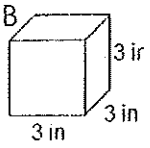
14. The Montgomery's are building a circular pond in their backyard. Find the area of the yard after the pond is put in.

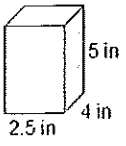
Subtract the area of the pond from the area of the yard..

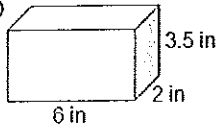


15. Joshua wants to mail a care package to our troops overseas. He has 45 in³ of materials to ship. Which of the following rectangular prisms is large enough to hold her items?

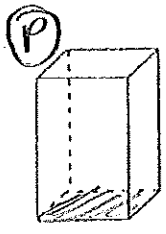
A


B


C


D


16. The volume of the solid figure below is 648 cubic inches. The hieght is 9 ~~square~~ inches. What is the area of the base of this solid?

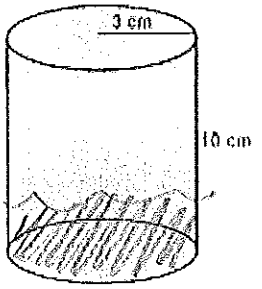


A 72 cubic in B 5832 cubic in
C 639 cubic in D not here

P F V = Bh
P 648 = B·9
S 9 9
72 = B ← area of the base!

17. Haley checked a cylindrical beaker in the science lab and found that it was $\frac{1}{4}$ full.

How many cubic centimeters of fluid remains in the beaker?

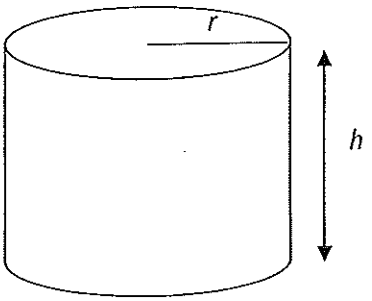


A 282.6 cubic cm
B 118.4 cubic cm
C 141.3 cubic cm
D 70.65 cubic cm

$\frac{V}{4}$

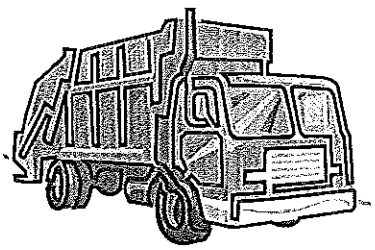
18. If the radius of the cylinder is 3 and the height is twice the radius, then the formula for the volume is:

A. $v = \pi \cdot 3^2 \cdot 6$
B. $v = 3 \cdot 3 \cdot 6$
C. $v = 3 \cdot 3 \cdot 3$
D. $v = \pi \cdot 3 \cdot 6$



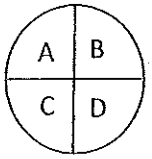
19. How many cubic feet of sand can be hauled in a dump truck if its bed is 6 feet deep, 8 feet wide, and 10 feet long.

A. 480 cu. ft. B. 240 cu. ft.
C. 58 cu. ft. D. 48 cu. ft.



2nd semester exam Review 2014
Part 5
Probability

1. Juan will roll a fair number cube numbered 1 though 6 and spin a spinner. The number cube and spinner are shown. What is the probability of rolling a 5 and spinning a C?



A $\frac{1}{24}$ B $\frac{1}{10}$ C $\frac{5}{12}$ D $\frac{1}{20}$

$\frac{1}{6} \times \frac{1}{4} = \frac{1}{24}$

2. Billy has a spinner that is divided into red, yellow, blue, and green sections. He spun the spinner 20 times and got the following results.

Color	Red	Yellow	Blue	Green
Number of Times	4	2	5	9

Based on his results, how many times can Billy expect the spinner to land on a blue section if he spins it 60 times?

A 5 times B 15 times C 25 times D None

$\frac{5}{20} = \frac{15}{60}$ (×3)

3. You roll a die 4 times. What is the probability of landing on an even number all 4 times?

A) $\frac{4}{6}$ B) $\frac{1}{6}$ C) $\frac{1}{8}$ D) $\frac{1}{16}$

$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

Identify the following situations (4 – 7) as independent, *A*, or dependent, *B*, events?

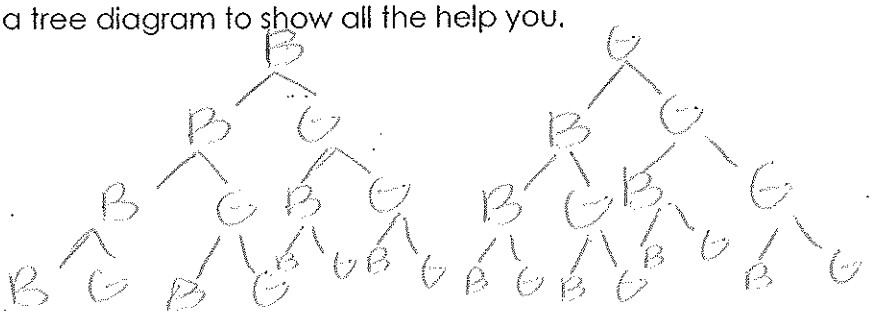
4) You roll a number cube and **if** you get a 5, you roll it again. B

5) You toss a coin, then toss it again, and toss it again. A

6) You pick a card, do not replace it, and draw another card. B

7) You draw a red marble, replace it, and draw a yellow marble. A

8) The Duggar family has 4 children, so far. How many possible combinations of boys and girls can there be in the family? Draw a tree diagram to show all the help you.



16

9) A coin is tossed 6 times. What is the probability of getting heads all 6 times?

$\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$

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10) Robert recorded the results to an experiment.

The spinner landed on orange – 6 times, purple – 9 times, silver – 3 times, and magenta – 7 times.

According to the results, what would be the probability of spinning a purple, as a percentage?

$\frac{9}{25} = \frac{36}{100} = 36\%$

11) Three number cubes are rolled. What is the probability that each cube shows a 5?

$\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6} = \frac{1}{216}$

12) You have 25 marbles in a bag. Six are red, 5 are blue, 8 are green, and six are swirls. On the first draw you get a swirl marble. If it is not replaced, find the probability of getting a swirl, and then a blue?

$\frac{1}{5} \times \frac{5}{24} = \frac{1}{20}$

13) In a deck of 52 cards, 26 are red and 26 are black. Find the probability the first card will be red and the second card is black if you do not replace the first card you draw.

$\frac{1}{2} \times \frac{26}{51} = \frac{13}{51}$

14) A bag contains 8 red marbles, 8 blue marbles and 9 green marbles. If you do not replace the marbles after each draw, what is the probability of drawing a blue marble, then a green marble?

$\frac{8}{25} \times \frac{9}{24} = \frac{9}{75} = \frac{3}{25}$

15) A spinner is divided into 4 sections; blue, green, red, and orange. Bob will spin the spinner twice. What is the probability of spinning red both times?

$\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

16) Andrew will roll a number cube three times. What is the probability that he will roll a number greater than 4 all three times?

$\frac{1}{3} \times \frac{1}{3} \times \frac{1}{3} = \frac{1}{27}$

17) Vito has the letters ALAMO written on 5 cards. He also has a number cube. What is the probability that he will choose a card with the letter A *and* then roll an odd number?

A	L	A	M	O

$\frac{2}{5} \times \frac{1}{2} = \frac{1}{5}$

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PROPORTIONS

*helpful hints!

- use proportions to compare 2 units.

Example: $\frac{160 \text{ mi}}{1 \text{ hr}} = \frac{180 \text{ mi}}{x \text{ hr}}$ (×3 from 1 hr to x hr; ×3 from 160 mi to 180 mi)

- use proportions to convert units of measurement.

Example: $\frac{12 \text{ in}}{1 \text{ ft}} = \frac{x \text{ in}}{7 \text{ ft}}$ (×7 from 1 ft to 7 ft; ×7 from 12 in to x in)

- use proportions for scale drawings or model figures.

SCALE OF A MAP .5in = 50mi

Example: $\frac{0.5 \text{ in}}{50 \text{ mi}} = \frac{5 \text{ in}}{x \text{ mi}}$ (×10 from 0.5 in to 5 in; ×10 from 50 mi to x mi)

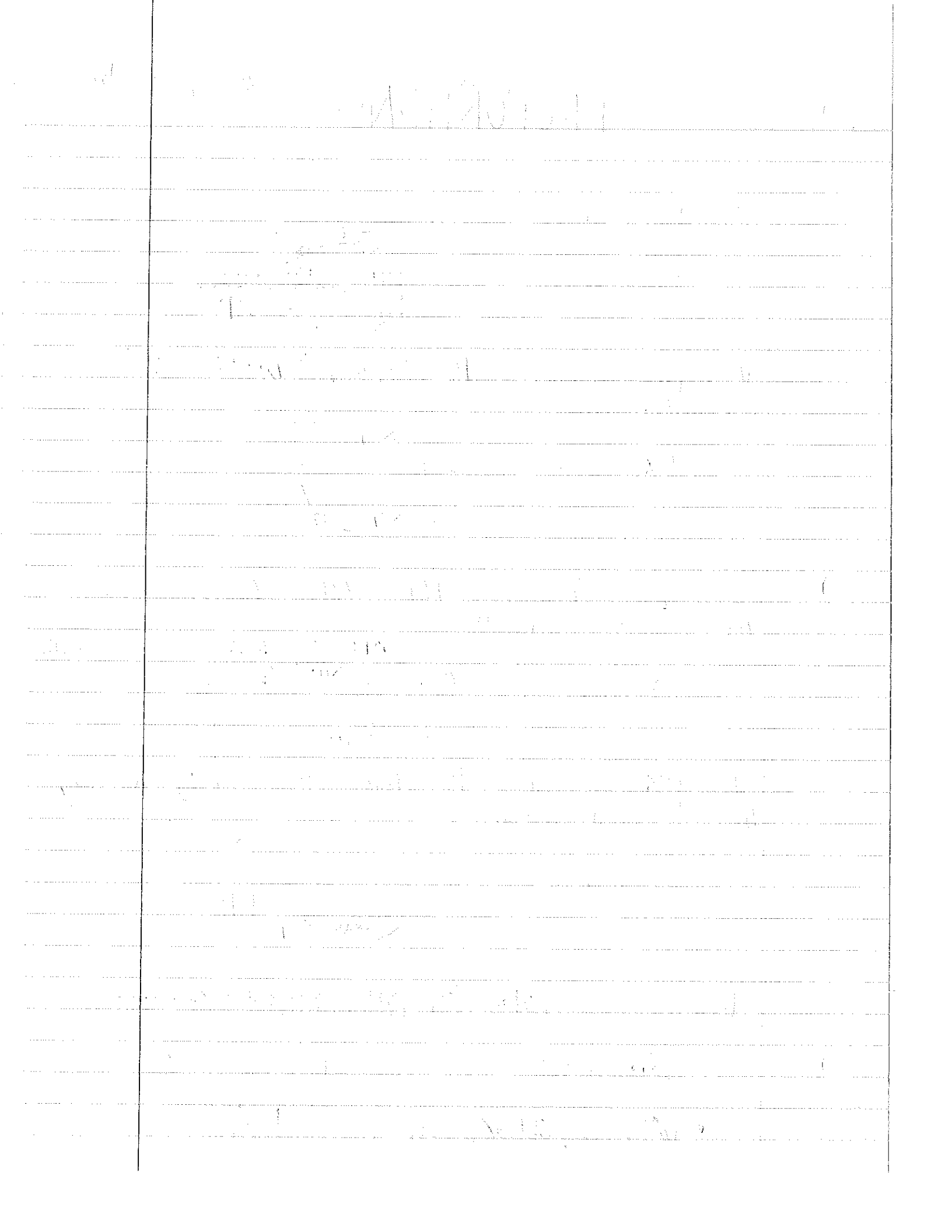
- use proportions to find the UNIT rate, or "better buy."

Example: $\frac{\$ 7}{2 \text{ lbs}} = \frac{\$ x}{1 \text{ lb}}$ (÷2 from \$7 to \$x; ÷2 from 2 lbs to 1 lb)

- use proportions for calculating percents.

Example: $\frac{4 \text{ P}}{5 \text{ W}} = \frac{x \%}{100}$

- tax, tip, discount included!



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Percents

*helpful hints

Use the percent proportion!

$$\frac{\text{PART}}{\text{WHOLE}} = \frac{\%}{100}$$

- Tax is added to the total cost!
- Tip is added to the total cost!
  - tip is found after tax is added
- Discount is subtracted from the total cost.
- sale price is after discount has been subtracted.
- Discount comes before tax is added.

Example: Mason wants to buy a cell phone for $200. It's on sale for 20% off and tax is 7%.

DISCOUNT!

$$\frac{\$40}{\$200} = \frac{20\%}{100}$$

$$\frac{\$11.20}{\$160} = \frac{7\%}{100} \quad \leftarrow \text{tax}$$

$200 - 40 = 160$ ← sale price

$160 + 11.20 = \boxed{\$171.20}$ TOTAL COST!