

NPS Learning in Place – Math 7

Name _____ School _____ Teacher _____

Week 1	
April 6 -10	Day 1-5
Week 2	
April 20-24	Day 6- 10

Grade 7 Mathematics Formula Sheet
2016 Mathematics Standards of Learning

Geometric Formulas

$$A = \frac{1}{2}bh$$

$$p = 4s$$

$$A = s^2$$

$$p = 2l + 2w$$

$$A = lw$$

$$C = 2\pi r$$

$$C = \pi d$$

$$A = \pi r^2$$

$$V = lwh$$

$$S.A. = 2lw + 2lh + 2wh$$

$$V = \pi r^2 h$$

$$S.A. = 2\pi r^2 + 2\pi rh$$

Pi

$$\pi \approx 3.14$$

$$\pi \approx \frac{22}{7}$$

Abbreviations

milligram	mg	ounce	oz	Area	A
gram	g	pound	lb	Circumference	C
kilogram	kg	quart	qt	Perimeter	p
milliliter	mL	gallon	gal.	Surface Area	S.A.
liter	L	inch	in.	Volume	V
kiloliter	kL	foot	ft		
millimeter	mm	yard	yd		
centimeter	cm	mile	mi.		
meter	m	square inch	sq in.		
kilometer	km	square foot	sq ft		
square centimeter	cm ²	cubic inch	cu in.		
cubic centimeter	cm ³	cubic foot	cu ft		

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Frequency Tables and Histograms

* A **frequency table** shows how often an item, number, or range of numbers occurs.

*When using a range of numbers, the data is separated into equal _____.

*Frequency tables can be used to make histograms.

Using intervals of numbers:

The winning Super Bowl scores from 1983 to 2002 are listed in the table. Make a frequency table of the data.

Winning Scores			
20	34	23	34
31	35	27	49
30	52	37	20
55	20	42	39
46	38	38	27

Step 1: Draw a table. Label columns:
Tally, Frequency,

Step 2: Complete the table using the data.

Scores	Tally	Frequency
20-28		6
29-37		
38-46		
47-55		
Total		

Example: Complete the table by filling in the blanks then answer the following question.

The frequency table shows the record high temperatures reported by each state of the United States. How many states have reported temperatures above 111° F?

Temp (°F)	Tally	Frequency	Cumulative Frequency
100-105			
106-111		12	
112-117			
		14	
124-129		2	
		1	

Step 1: Draw and label the axes. (Remember, the x-axis will be intervals!)

Step 2: Draw a bar to represent the frequency of each interval.

Practice:

1) The number of wins for the 29 teams of the NBA for the 2000-2001 seasons has been organized into a frequency table. Make a histogram of the data.

Step 1: Draw and label the axes. If necessary, create interval for the x-axis

Step 2: Draw a bar to represent the frequency of each interval.

****Why do we use a histogram for this situation?**

# of wins	Frequency
11-20	3
21-30	4
31-40	4
41-50	10
51-60	8

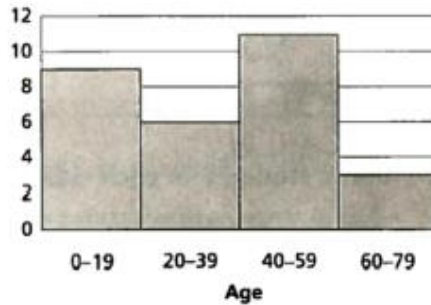
an

a) How many teams won more than 30 games?

b) What was the greatest number of wins by a team?

Week 1 Day 2 Creating and interpreting Histograms

- 6) The histogram below shows the number of people that visited the library last Wednesday. Use the data to complete the frequency table and answer the questions below.

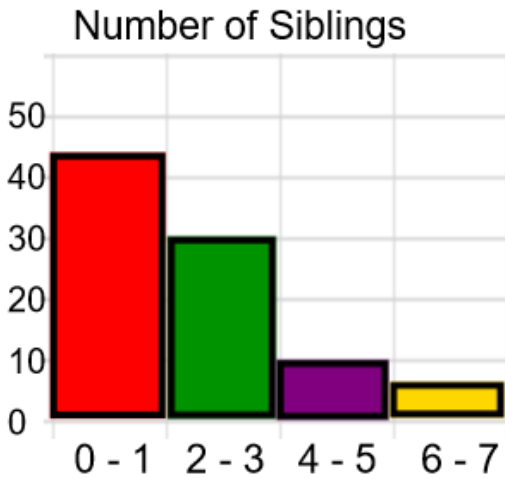


Age	Frequency

What was the most common age of people at the library?

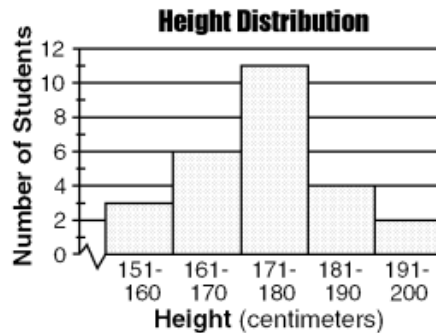
How many people were between the ages of 20 and 59?

7. Answer the following questions based on the histogram below:



- How many students have 0-1 siblings?
 - How many students have more than 3 siblings?
 - How many students have between 0-3 siblings?
- D. Using the histogram, can you tell exactly how many people have 5 siblings? Explain


8. The accompanying histogram shows the height distribution for students in a high school mathematics class.



What is the total number of students in the class?

- A) 28 B) 26 C) 49 D) 11

WEEK 1 DAY 3	SHOW YOUR WORK!
<p>1. Which of the following is equivalent to 16?</p> <p>A. $\sqrt{324}$ B. $\sqrt{289}$ C. $\sqrt{256}$ D. $\sqrt{196}$</p>	
<p>2. The Newport News Middle Ground Light is the oldest Caisson lighthouse in Virginia. Its base is shaped like a cylinder with a diameter of 25 feet and a height of 56 feet. Which shows how to find the volume of the lighthouse base?</p> <p>A. $\left(\frac{56}{2}\right)^2 \bullet \pi \bullet 25$ B. $56^2 \bullet \pi \bullet 25$</p> <p>C. $25^2 \bullet \pi \bullet 56$ D. $\left(\frac{25}{2}\right)^2 \bullet \pi \bullet 56$</p>	
<p>3. A bag contains 8 blue marbles, 15 red marbles, 10 yellow marbles, and 3 brown marbles. If a marble is randomly selected, what is the probability that it will be brown?</p> <p>A. 0.27 B. 22% C. $0.0\overline{83}$ D. $\frac{3}{8}$</p>	
<p>4. California has the most members of any state in the House of representatives with 53. This is 9 more than 4 times the number of members from Virginia. If r represents the number of members in the House from Virginia, which equation best models the situation?</p> <p>A. $4r - 9 = 53$</p> <p>B. $4r + 9 = 53$</p> <p>C. $4(r + 9) = 53$</p> <p>D. $9(r + 4) = 53$</p>	

WEEK 1 DAY 3	SHOW YOUR WORK!
<p>1. Which of the following numbers is NOT a perfect square?</p> <p>A. 121 B. 144 C. 200 D. 225</p>	
<p>2. The radius and the height of a cylindrical barrel are shown. The owner is painting the container to restore it's original color. Which of these represents the total number of square yards of paint needed to paint the barrel?</p> <p>A. $\pi \bullet 4^2 \bullet 6$</p> <p>B. $\pi \bullet 8^2 \bullet 6$</p> <p>C. $2\pi \bullet 4^2 + 2\pi \bullet 4 \bullet 6$</p> <p>D. $2\pi \bullet 8^2 + 2\pi \bullet 8 \bullet 6$</p>  <p>The image shows a brown cylindrical barrel. A horizontal line across the top circular face is labeled '4 ft', indicating the radius. A vertical line along the right side of the barrel is labeled '6 ft', indicating the height.</p>	
<p>3. The records of a sporting goods store show that 1 out of every 4 balls purchased is a football. What is the probability that a football will NOT be purchased when a ball is purchased</p> <p>A. $\frac{1}{1}$ B. $\frac{3}{4}$ C. $\frac{1}{4}$ D. $\frac{1}{25}$</p>	
<p>4. Which phrase best represents $5n + 3 = 2$?</p> <p>A. Three more than the product of five and a number, n, is two</p> <p>B. Three more than the difference of five and a number, n, is two</p> <p>C. The product of three more than the number, n, and five is two</p> <p>D. The quotient of five and a number, n, increased by three is two.</p>	

WEEK 1 DAY 4

SHOW YOUR WORK!

1. Which of the following is equivalent to 19?

- A. $\sqrt{38}$ B. $\sqrt{76}$ C. $\sqrt{324}$ D. $\sqrt{361}$

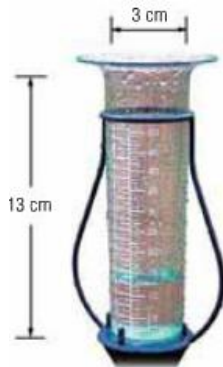
2. The decorative rain gauge shown has a height of 13 centimeters and diameter of 3 centimeters. Which of these represents the amount of water the rain gauge can hold?

A. $\left(\frac{13}{2}\right)^2 \cdot \pi \cdot 3$

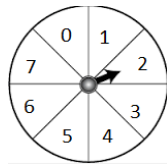
B. $13^2 \cdot \pi \cdot 3$

C. $3^2 \cdot \pi \cdot 13$

D. $\left(\frac{3}{2}\right)^2 \cdot \pi \cdot 13$



3. What is the probability of the spinner landing on a number less than 3?



- A. 25% B. 37.5% C. **50%** D. 75%

4. Which of these is an algebraic form for the verbal statement shown?


“2 subtracted from the quotient of a number, y , and 8”

A. $2 - \frac{y}{8}$

B. $2 - 8y$

C. $\frac{y}{8} - 2$

D. $8y - 2$

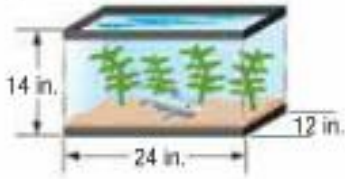
WEEK 1 DAY 4	SHOW YOUR WORK!
<p>1. Which of the following is equivalent to the square root of 144?</p> <p>A. 12 B. 72 C. 144 D. 288</p>	
<p>2. The candle with the given dimensions will be wrapped and given as a gift. Which of these represents the minimum amount of paper needed to wrap the candle?</p> <p>A. $\pi \bullet 3^2 \bullet 4$</p> <p>B. $\pi \bullet 6^2 \bullet 4$</p> <p>C. $2\pi \bullet 3^2 + 2\pi \bullet 3 \bullet 4$</p> <p>D. $2\pi \bullet 6^2 + 2\pi \bullet 6 \bullet 4$</p> 	
<p>3. The desserts at a picnic include 8 ice cream sandwiches, 9 chocolate frozen bananas, 12 ice cream cones, 11 frozen pops, 16-push-up sticks, and 14 shaved ice cones. What is the probability of choosing an ice cream cone at random?</p> <p>A. $\frac{6}{29}$ B. $\frac{6}{35}$ C. $\frac{1}{6}$ D. $\frac{1}{12}$</p>	
<p>4. Jacob charges \$20 for mowing the front and backyard and an additional \$8 for trimming the edges of the 2 yards</p> <ul style="list-style-type: none"> Let m represent the money earned for mowing the 2 yards Let t represent the total he earns each day <p>A. $20m + 2 + 8 = t$</p> <p>B. $20m \bullet 2 + 8 = t$</p> <p>C. $20m - 7 = t$</p> <p>D. $20m + 8 = t$</p>	

WEEK 1 DAY 5**SHOW YOUR WORK!**

1. What is the absolute value of -4.8?

- A. 4.8 B. 2.4 C. -2.4 D. -4.8

2. A fish aquarium is shown.



What is the volume of the aquarium?

- A. 168 in^3 C. $2,016 \text{ in}^3$
B. 342 in^3 D. $4,032 \text{ in}^3$

3. A spinner marked with four sections blue, green, yellow, and red was spun 100 times. The results are shown in the table.

Section	Frequency
Blue	14
Green	10
Yellow	8
Red	68

Find the experimental probability of landing on green.

4. What value of x makes this equation true?

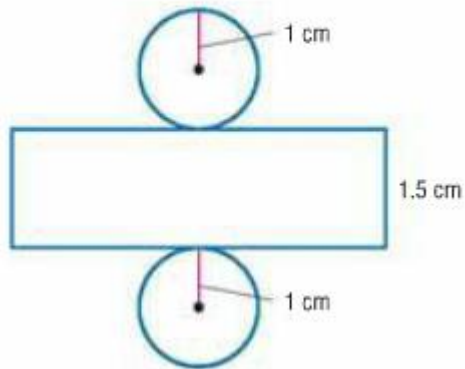
$$\frac{x}{4} - 10 = -6$$

- A. -64 B. 4 C. 16 D. 64

1. What is $|-14.12|$?

- A. -14.12 B. -7.06 C. 7.06 D. 14.12

2. Stacey has a cylindrical paper clip holder with the net shown.



What is the surface area of the paper clip holder?

3. A spinner marked with four sections blue, green, yellow, and red was spun 100 times. The results are shown in the table.

Section	Frequency
Blue	14
Green	10
Yellow	8
Red	68

Find the theoretical probability of landing on red

4. Which value of n makes the equation true?

$$10 = 4x + 2$$

- A. 2 B. 3 C. 4 D. 8

1. What is the absolute value of $\frac{-2}{3}$?

- A. $\frac{3}{2}$ B. $\frac{2}{3}$ C. $\frac{-2}{3}$ D. $\frac{-3}{2}$

2. How much cardboard is needed to make the box shown?

- A. 37.5 ft^2
B. 24.4 ft^2
C. 8 ft^2
D. 6.1 ft^2



3. A six sided number cube numbers 1-6 is rolled. What is the theoretical probability of rolling a 5.



4. What value of x makes this equation true?

$$4x + 7 = 43$$

- A. 12 B. 10 C. 9 D. 8

WEEK 2 DAY 1**SHOW YOUR WORK!**

1. On the number line, which is the shortest distance from zero?

- A. $|-12|$ B. -21 C. $\left|\frac{1}{12}\right|$ D. $\frac{12}{1}$

2

The oatmeal container shown has a diameter of $3\frac{1}{2}$ inches and a height of 9 inches. Which is closest to the number of cubic inches it will hold when filled?



- A. 32 C. 75.92
B. 42.78 D. 86.59

3. What is the experimental probability of rolling a 3?

Rolled	# of times
1	6
2	15
3	18
4	10
5	3
6	8

4. What value of h makes this equation true?

$$33.5 = 6.5h - 18.5$$

WEEK 2 DAY 2**SHOW YOUR WORK!**

1. Arrange the three numbers shown in order from least to greatest.

$$2.7 \times 10^3 \quad 1.5 \times 10^5 \quad 2.17 \times 10^3$$

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2. Which statement is false?

- A. All rectangles are parallelograms
- B. All squares are rectangles
- C. All rhombuses are squares
- D. All parallelograms are quadrilaterals

3. Which number has the same experimental and theoretical probability?

Rolled	# of times
1	6
2	15
3	18
4	10
5	3
6	8



4. Mr. Davis drives 508 miles in eight hours. At this rate, how many miles does she drive in six hours?

- A. 381
- B. 340
- C. 254
- D. 101

WEEK 2 DAY 2**SHOW YOUR WORK!**

1. Arrange the three numbers shown in order from greatest to least.

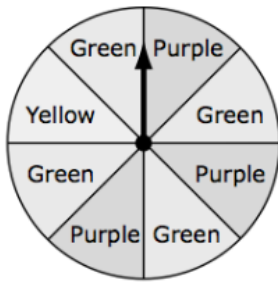
$$2.3 \times 10^{-2} \quad 4.2 \times 10^{-4} \quad 1.5 \times 10^1$$

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2. Which statement is True?

- A. All rectangles are squares
- B. All quadrilaterals are parallelograms
- C. All squares are parallelograms
- D. All rectangles are rhombuses

3. A spinner is divided into 8 equal sections. Lara spins the spinner 120 times. It lands on purple 30 times.



How many more times does Lara need to spin the spinner and have it land on purple for the frequency to equal the theoretical probability?

- A.15 B.24 C.45 D. 54

4. Kevin is putting together information packets to give to parents at open house. He can out together 8 packets 20 minutes. Which of the following proportions could be used to find how many minutes, m , it will take Kevin to put together 40 packets?

A. $\frac{40}{m} = \frac{20}{8}$

B. $\frac{20}{8} = \frac{m}{40}$

C. $\frac{m}{8} = \frac{20}{40}$

D. $\frac{20}{40} = \frac{8}{m}$

WEEK 2 DAY 3**SHOW YOUR WORK!**

1. Which fraction and decimal are equivalent to 10^{-1}

- A.** $-\frac{1}{10}$ and -0.01
B. $-\frac{1}{10}$ and -0.1
C. $\frac{1}{10}$ and 0.01
D. $\frac{1}{10}$ and 0.1

2.

I. Select all statements that are true about all parallelograms?

all 4 sides are congruent	all angles are congruent	the sum of all the angles is 360°
opposite sides are parallel	diagonals are congruent	diagonals bisect each other

3. Mike rolled a number cubed numbered 1-6 fifty times. He rolled the number 2 ten times. Complete the inequality below to show the relationship between the theoretical probability and the experimental probability in Mike's situation.

Experimental Probability
Theoretical Probability

>

4. 12 ounce shampoo bottle lasts Mark 16 weeks. How long would you expect an 18-ounce bottle of the same brand to last him?

- A. 6 weeks
B. 20 weeks
C. 24 weeks
D. 30 weeks

1. Which expressions and fraction are equivalent to 0.0001?

a. 10^{-3} and $\left(\frac{1}{100}\right)$

b. 10^{-6} and $\left(\frac{1}{60000}\right)$

c. 10^{-4} and $\left(\frac{1}{40000}\right)$

d. 10^{-4} and $\left(\frac{1}{10000}\right)$

2

Which answer choice best describes the Quadrilateral pictured?

- A quadrilateral, parallelogram
- B rhombus, parallelogram
- C rectangle, rhombus
- D trapezoid, isosceles trapezoid



3. Leslie tossed a coin 300 times. She tossed tails 175 times. Complete the inequality below to show the relationship between the theoretical probability and the experimental probability in Leslie's situation

Experimental Probability

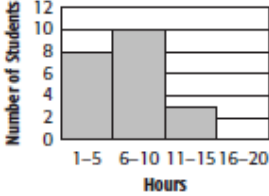
Theoretical Probability

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4. The waiting time to ride a roller coaster is 2 minutes when 15 people are in line. How long is the waiting time when 240 people are in line?

- A. 90 minutes
- B. 32 minutes
- C. 30 minutes
- D. 16 minutes

WEEK 2 DAY 4	SHOW YOUR WORK!
<p>1.</p> <p>Which expression is equivalent to</p> $\frac{1}{10} \cdot \frac{1}{10} \cdot \frac{1}{10} \cdot \frac{1}{10} \cdot \frac{1}{10} \cdot \frac{1}{10} ?$ <p>A. -10^6 B. 10^{-6}</p> <p>C. -10^{-6} D. 10^6</p>	
<p>2. Which property applies to squares and rhombus?</p> <p>A. four right angles B. diagonals are congruent C. four congruent sides D. 1 pair of parallel lines</p>	
<p>3. Karen represented the values of her 30 stamp collection in a histogram and in a line plot. Which if these best describes the graph and characteristics that allow Karen to find the median value of her stamps.</p> <p>A. A histogram because it lists each value in a set of data B. A histogram because it shows the frequency of data using intervals C. A line plot because it shows the range of the data D. A line plot because it displays the frequency a value occurs in a set of data</p>	
<p>4. Which value of n makes the $-8 < n + 15$ true?</p> <p>A. -28 B. - 23</p> <p>C. -3 D. 6</p>	

WEEK 2 DAY 4	SHOW YOUR WORK!										
<p>Which expression is equivalent to 10^{-3}?</p> <p>A. $(10)(10)(10)$</p> <p>B. $(-10)(-10)(-10)$</p> <p>C. $\left(-\frac{1}{10}\right)\left(-\frac{1}{10}\right)\left(-\frac{1}{10}\right)$</p> <p>D. $\left(\frac{1}{10}\right)\left(\frac{1}{10}\right)\left(\frac{1}{10}\right)$</p> <p>1.</p>											
<p>2. Which property applies to rectangles and trapezoids?</p> <p>A. Opposite sides are congruent</p> <p>B. Four right angles</p> <p>C. Opposite angles are congruent</p> <p>D. They are quadrilateral</p>											
<p>3.</p> <p>This histogram shows the weekly hours students spent on homework.</p> <p style="text-align: center;">Hours Spent on Homework</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data from Histogram</caption> <thead> <tr> <th>Hours</th> <th>Number of Students</th> </tr> </thead> <tbody> <tr> <td>1-5</td> <td>8</td> </tr> <tr> <td>6-10</td> <td>10</td> </tr> <tr> <td>11-15</td> <td>3</td> </tr> <tr> <td>16-20</td> <td>2</td> </tr> </tbody> </table> <p>Which statement <i>must</i> be true?</p> <p>A. A stem-and-leaf plot of this data will show 18 values with a stem of 0.</p> <p>B. Students who studied 6 to 10 hours will be represented by the largest sector in a circle graph of this data.</p> <p>C. In a line plot of this data, 8 hours will appear most frequently.</p> <p>D. At least 50% of a circle graph of this data will represent the students who studied 6 to 10 hours.</p>	Hours	Number of Students	1-5	8	6-10	10	11-15	3	16-20	2	
Hours	Number of Students										
1-5	8										
6-10	10										
11-15	3										
16-20	2										
<p>4. What is the solution to $x - 15 < 18$</p> <p>A. $x < 3$ B. $x > 3$</p> <p>C. $x < 33$ D. $x > 33$</p>											

WEEK 2 DAY 5	SHOW YOUR WORK!
<p>1. Which list of numbers is arranged from least to greatest</p> <p>A. 0.805, $\frac{8}{10}$, 81% B. $\frac{8}{10}$, 81%, 0.805</p> <p>C. 81%, 0.805, $\frac{8}{10}$ D. $\frac{8}{10}$, 0.805, 81%</p>	
<p>2. Which of these is a property of a parallelogram?</p> <p>A. Four congruent sides B. Diagonals are not congruent C. Four congruent angles D. 1 pair of parallel sides</p>	
<p>3. Natasha recorded the time it took 15 students run a mile. She created a histogram and a stem-and-leaf plot to represent the data. To determine the mean of the data, Natasha analyzed the-</p> <p>A. stem-and-leaf plot because the mean is always the "leaf" that appears most often B. histogram because it showed each value in the set of data C. histogram because the mean is always the bar with the greatest height D. stem-and-leaf plot because it showed each value in the set of data</p>	
<p>4. What is the solution to $\frac{x}{3} \leq -21$</p> <p>A. $x \leq -7$ B. $x \geq -7$ C. $x \leq -63$ D. $x \geq -63$</p>	