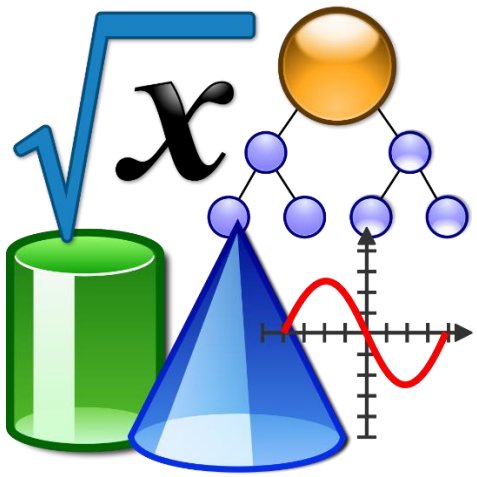
Name _____ School _____ Teacher _____

NPS Learning in Place

MATH 6/6H

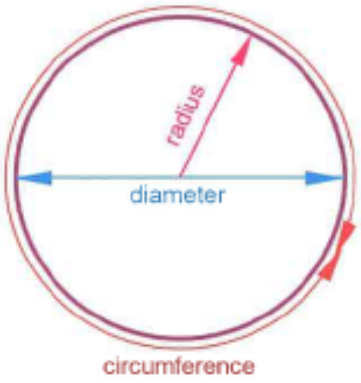


Week 1	**Day 1- Day 5**
Week 2	**Day 6 – Day 10**

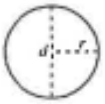
Circles

- **Area:** Is the number of **square units that can cover the inside** of a shape.
  Look for: painting, cover, how many square units, what is the area, wrapping
- **Circumference**: Is the distance **(length) around a circle**.
  Look for: fencing, around, circumference, units
- **Diameter:** The distance from one point on a circle through the center to another point on the circle. It is usually denoted using the letter d.
- **Radius:** The distance from the center to the circumference of a circle. It is **half of the circles diameter**. It is usually denotes using the letter *r*.

Pi: The **ratio of a circle's circumference/diameter**, the symbol that represents Pi is "π" which is 3.14159265... No matter how small or large the circle its circumference is always about 3.14 times bigger than the diameter.



Formulas



$C = 2\pi r$
$C = \pi d$
$A = \pi r^2$

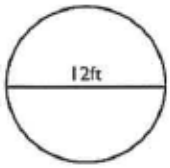
Pi

$\pi \approx 3.14$
$\pi \approx \frac{22}{7}$

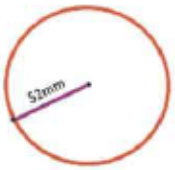
Abbreviations

Area	A
Circumference	C

Calculating Circumference

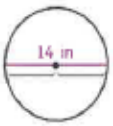


$C = \pi d$
$C = (3.14)(12)$
$C = 37.68$ ft



$C = 2\pi r$
$C = (2)(3.14)(52)$
$C = 326.56$ mm

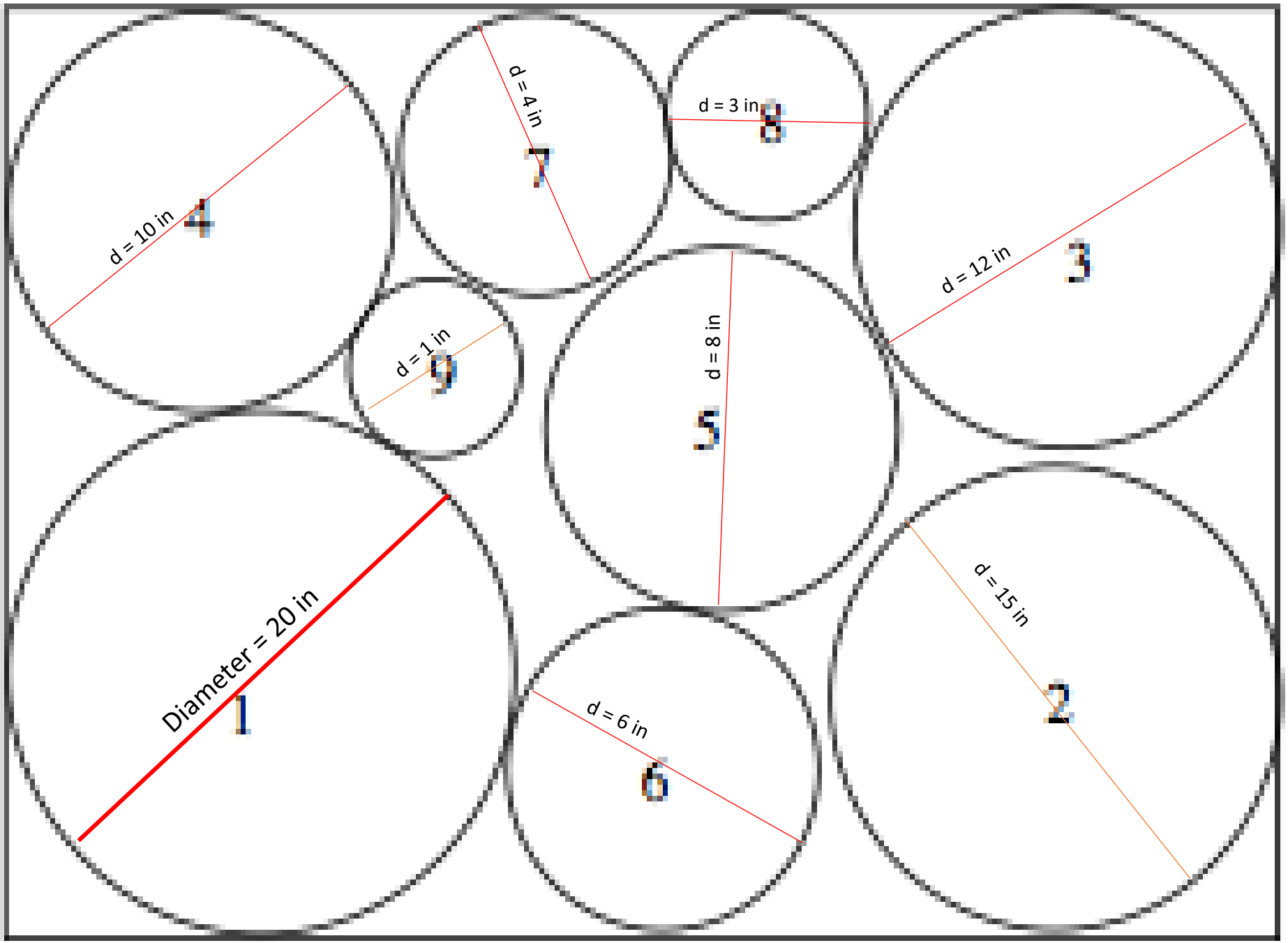
Calculating Area



$\pi = 3.14$
$d = 14$ in
$r = 7$ in

$r = \frac{1}{2}d$
$= \frac{d}{2}$
$= \frac{14}{2}$
$= 7$

$A = \pi r^2$
$A = (\pi)(r)(r)$
$A = (3.14)(7)(7)$
$A = (3.14)(49)$
$A = 153.86$ in^2


Diameter = 20 in
1
d = 15 in
2
d = 12 in
3
d = 10 in
4
d = 8 in
5
d = 6 in
6
d = 4 in
7
d = 3 in
8
d = 1 in
9

Week 1 Day 1 Deriving Pi

Complete the table below using the circles from the previous page

Circle	Diameter (Length of Line)	(Radius) Length of Line Divided by 2	Circumference $C = \pi d$	Ratio of circumference to diameter C ÷ D	Value of π
1	20 in	10 in	C = (3.14)(20) C = 62.8 in	62.8 ÷ 20 3.14	3.14
2					
3					
4					
5					
6					
7					
8					
9					

Writing Prompt: Given the proportional relationship between circumference and diameter, explain why $\frac{C}{d} = \pi$. Would the results of this proportional relationship be the same as $\frac{C}{2r} = \pi$? Explain why or why not.

Week 1 Day 2

1. Drew is investigating a circular model during an experiment and estimates that his model's circumference is about 3 times the measure of the circle's diameter. With this information, Joe could derive the value of-

   A. π (pi)
   B. *h* (height)
   C. *l* (length)
   D. *w* (width)

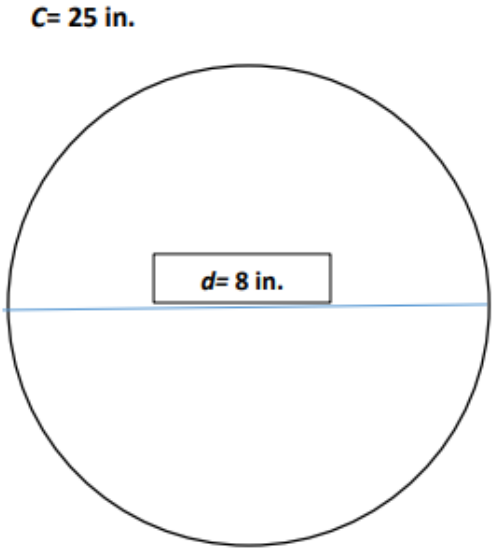
2. What is an approximation for the value of pi (π)?

3. Four students in a science class were given a plastic circle and asked to measure the circumference and diameter. Their results were recorded in the table.

Student Name	Circumference (Inches)	Diameter (Inches)
Kim	43.2	12
Sophia	36.6	11.7
Chris	46.2	13.2
Jacob	29.9	10

   Which student can calculate the best estimated value for pi (π) from their measurements?

4. Victoria measured a circle and found d, the diameter, was 8 inches and C, the circumference, was 25 inches.



Which expression represents an approximate value for π?

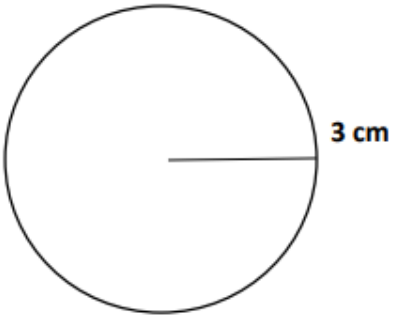
E. $25 + 8$
F. $25 \div 8$
G. $25x8$
H. $25 - 8$

Week 1 Day 2

5. Ryan wants to determine the diameter of a musical compact disc (CD) is 12cm. Which is the closest to the circumference of the outer edge of this CD?
   A. 37.68 cm
   B. 452.14 cm
   C. 56.52 cm
   D. 18.84 cm

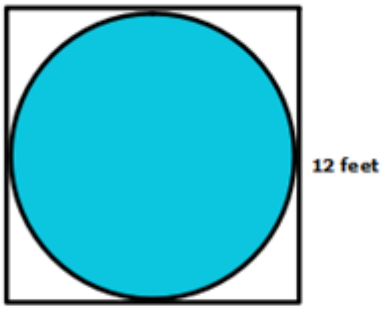
6. The diameter of the circular wading pool is 6 feet. Which is the *closest* to the circumference of the circle?
   E. 18.84 ft
   F. 37.68 ft
   G. 28.26 ft
   H. 113.04 ft

7. Which is the closest to the circumference of the circle shown below?



   F. 75.36 cm
   G. 37.68 cm
   H. 18.84 cm
   J. 113.04 cm

8. **Use the picture below.**



Which is closest to the area of the circle if the dimensions of the square are 12 ft and 12 ft as shown?

A 113 ft² **B** 75 ft² **C** 37 ft² **D** 257 ft²

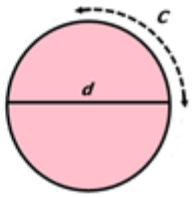
9. **Which of the following correctly describes the relationship between the circumference (C) and diameter (d) of the circle shown?**

A $\pi \cdot C = d$

B $C \cdot d = \pi$

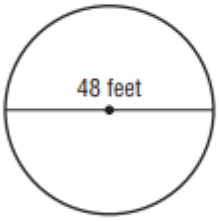
C $\frac{d}{C} = \pi$

D $\frac{C}{d} = \pi$



1.

Round barns were once popular in part because they were cheaper to build than rectangular ones. The Hoffman Round Barn, built in Wolftown in 1913, has a roughly circular floor with a diameter of 48 feet as shown below.

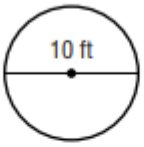


Which is *closest* to the circumference of the barn?

F 151 feet
G 301 feet
H 904 feet
J 1,809 feet

2.

In Emma's garden there is a circular pond with a diameter of 10 feet.



What is the approximate circumference of this pond?

A 15.7 ft
B 31.4 ft
C 39.25 ft
D 62.8 ft

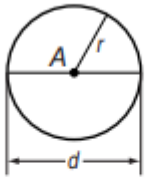
3.

The value of π is equal to which of the following ratios if *C* represents the circumference of a circle and *d* represents the diameter?

A $\frac{2d}{C}$
B $\frac{C}{2d}$
C $\frac{d}{C}$
D $\frac{C}{d}$

4.

Circle *A* has diameter *d* and radius *r*.



What is the result of dividing the circumference by the diameter?

F $2r$
G π
H 2
J 2π

5.

A bank manager decides to frame a picture of a quarter to hang in the lobby of the bank. The diameter of the quarter in the picture is shown below.

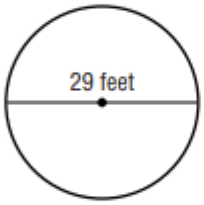
Which expression equals the area of the quarter in the picture?

A $16 \cdot 16 \cdot \pi$
B $8 \cdot 8 \cdot \pi$
C $16 \cdot \pi$
D $8 \cdot \pi$

Week 1 Day 3

6.

The Mercury Fountain in Reston was designed by Saint Clair Cemin. It features a large statue of the Roman god Mercury on top of a column in the middle of circular pools of water. Suppose one of the pools has the dimensions shown below.

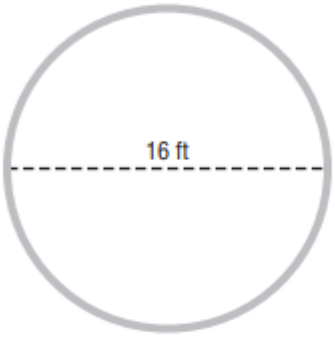


Which of the following is closest to the area of the pool?

F 46 square feet
G 182 square feet
H 661 square feet
J 2,642 square feet

7.

At Jarod's karate school, the instructor used chalk to mark a circular area for a grappling ring. The circle represents the size of the ring.



Which expression shows how to find the approximate area of the ring?

F 3.14 • 16 • 16
G 3.14 • 2 • 8 • 8
H 3.14 • 8 • 8
J 3.14 • 2 • 16 • 16

8.

A clock maker is making a circular clock with a 30-centimeter diameter.

What is the distance around the edge of the clock?

A 47.1 cm
B 70.7 cm
C 94.2 cm
D 282.6 cm

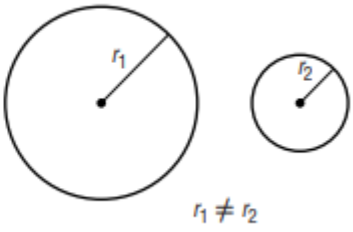
9. T**he diameter of a wheel on this bicycle is 22 inches. What is the circumference of a wheel on this bicycle?**

A. 34.54 inches
B. 69.08 inches
C. 379.94 inches
D. 1,519.8 inches

10.

What do the two circles shown at the right have in common?

A They have the same area.
B They have the same ratio of area to circumference.
C They have the same circumference.
D They have the same ratio of circumference to diameter.



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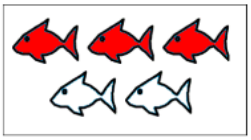
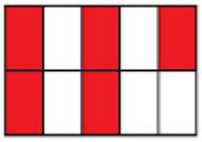
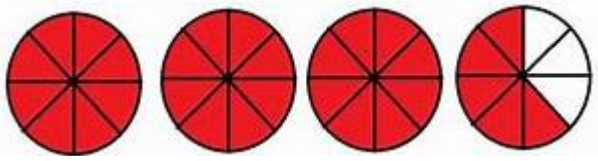
6.2a

1. Complete the table with equivalent fractions, decimals, and percentages. The red sections represent the numerator. All decimals should be rounded to the nearest thousandth and all fractions must be written in simplest form.

Picture	Fraction	Decimal	Percent
			
			
			

2. Which two answer choices represent the illustration below?



$3\frac{5}{8}$

458%

3.58

$\frac{37}{8}$

362.5%

0.625

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3. Write the equivalent decimal and percent for $\frac{4}{7}$. Round the decimal to the nearest thousandth.

Decimal Percent

4. Circle all of the numbers that are equivalent to $\frac{2}{9}$.

$0.22\overline{2}$ 29% $22.\overline{2}\%$ 0.29 $22\frac{2}{9}\%$ $0.29\overline{9}$

5. Which decimal and fraction are equivalent to 23% ?

A. 2.3 and $\frac{23}{1}$ B. 2.3 and $\frac{23}{10}$

C. 0.23 and $\frac{23}{100}$ D. 0.23 and $\frac{23}{1000}$

6. Jordan made a new playlist for his upcoming road trip and 25% of the songs are hip hop. Which fraction represents the number of songs on Jordan's playlist that are *not* hip hop?

A. $\frac{1}{4}$

B. $\frac{2}{5}$

C. $\frac{1}{2}$

D. $\frac{3}{4}$

Week 1 Day 5

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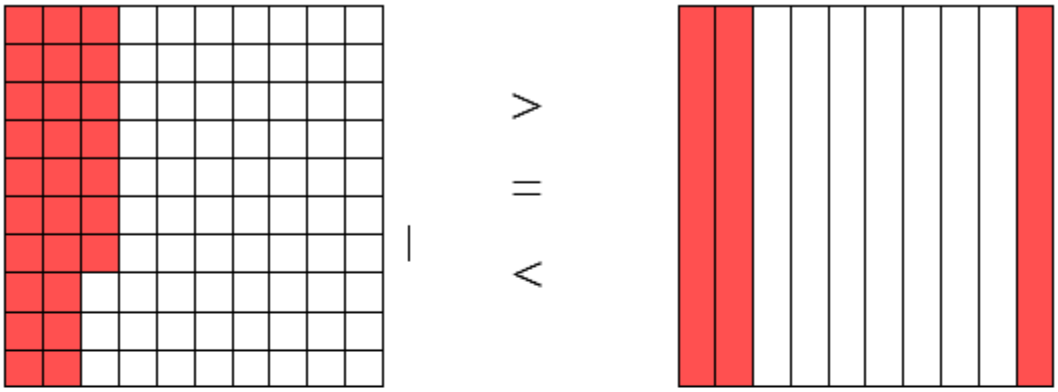
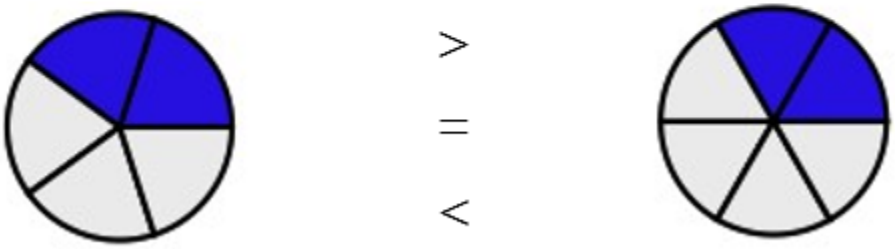
Algebra Readiness Formative Assessment

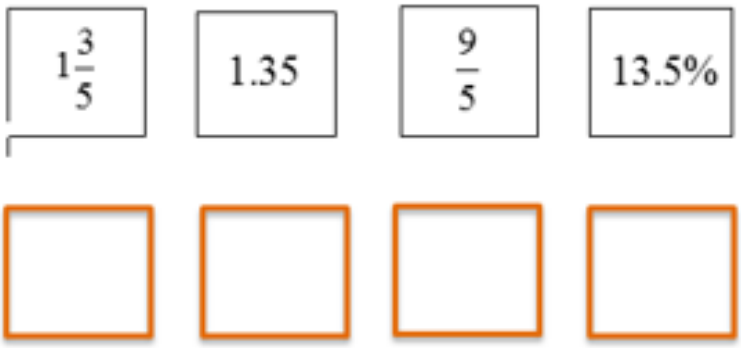
6.2b

1. Circle the inequality symbol that makes each pair of pictorial representations true.



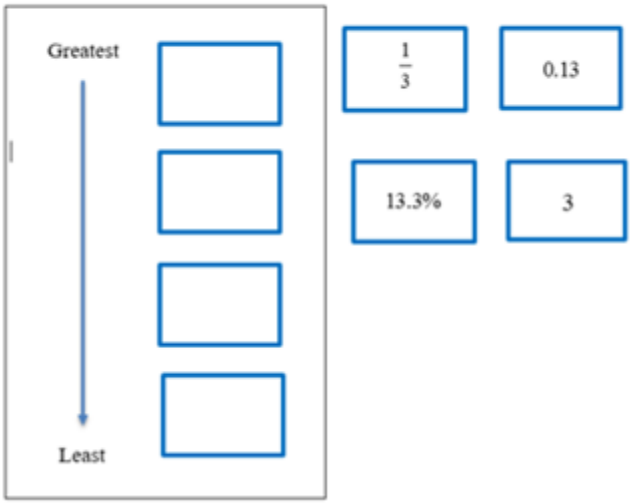


2. Put the following numbers in ascending order.



Week 1 Day 5

3. Put the following numbers in order from greatest to least.



4. Circle two numbers that make the inequality statement true.

$$0.25 < \_\_\_\_ < \frac{3}{4}$$

75% $\frac{2}{3}$ 0.225 $\frac{1}{5}$ 2.5% $0.\overline{6}$

5. At soccer practice, Keith ran $\frac{5}{8}$ of a mile, Jake ran $\frac{4}{9}$ of a mile, and Julian ran $\frac{1}{2}$ of a mile. Put these distances in descending order.

A. $\frac{4}{9}, \frac{1}{2}, \frac{5}{8}$

B. $\frac{1}{2}, \frac{4}{9}, \frac{5}{8}$

C. $\frac{1}{2}, \frac{5}{8}, \frac{4}{9}$

D. $\frac{5}{8}, \frac{1}{2}, \frac{4}{9}$

6. Which number goes in the blank space to make the inequality statement true?

$$\frac{5}{6} > \frac{\quad}{12}$$

A. 9 B. 10 C. 11 D. 12

7. The table shows changes in gasoline prices per gallon over one year.

Gasoline Prices	
Month	Change in cost per gallon
January	2.075
April	$\frac{103}{50}$
August	208.3%
December	$2\frac{3}{8}$

Which statement about these prices is true?

A. January > August

B. April > January

C. December < January

D. January < December

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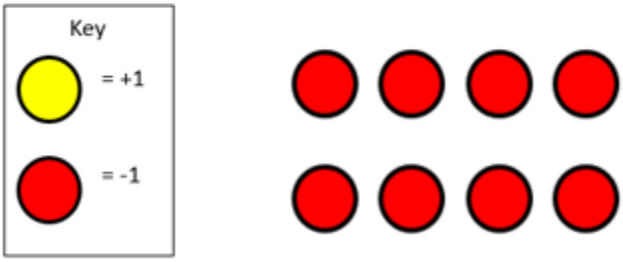
6.3a

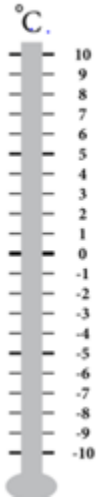
1. If you move the blue point ten units to the left, what number will it land on? _____

2. Use the key to answer the question below.



What integer is represented in the illustration above? _____

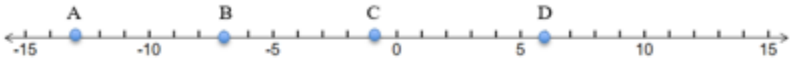
3. Illustrate where six degrees below zero is located on the thermometer below.



4. Shade all of the boxes that contain an integer.

$\lvert -8 \rvert$	$\sqrt{25}$	$-\frac{3}{4}$
1.7	0	2^3

5. Identify each integer represented on the number line below.



A = _____ B = _____ C = _____ D = _____

6. Write the integer represented by each situation below.

A loss of 5 yards on the football field _____

A withdrawal of sixty dollars from the ATM _____

A golfer ends up with a score 9 strokes over par _____

Water rises 35 feet above sea level _____

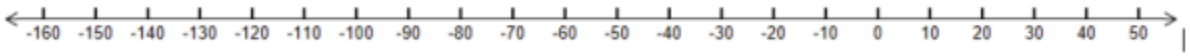
A mom loses 12 pounds after childbirth _____

A deposit of $100 at the bank _____

A temperature eleven degrees below zero _____

6.3b

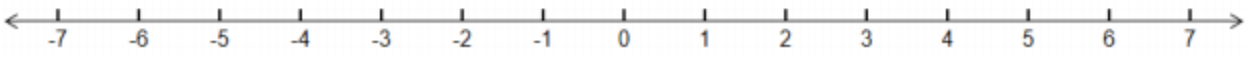
1. Use the number line to put the following integers in ascending order.



-40	20	0	-156	-13	6

2. Circle all of the integers on the number line that satisfy the inequality below.

$$-3 \leq x \leq 5$$



3. Identify all of the following statements that are true.

$10 \geq 9$	$1 < -9$	$6 \leq 6$	$-4 \geq -3$
$-11 < -7$	$-2 \geq -2$	$0 > -1$	$-5 \geq -7$

4. Which statement is true when comparing -9 and -4?

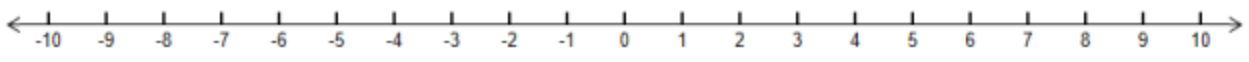
A. $-9 < -4$, because -9 lies to the right of -4 on the number line
B. $-9 > -4$, because -9 lies to the right of -4 on the number line
C. $-9 < -4$, because -9 lies to the left of -4 on the number line
D. $-9 > -4$, because -9 lies to the left of -4 on the number line

5. Which set of integers is listed is descending order.

A. $-10, -7, 2, 5, 13$
B. $13, 5, 2, -7, -10$
C. $2, 5, -7, -10, 13$
D. $13, -10, -7, 5, 2$

6.3c

1. Represent $|4|$ and $|-4|$ on the number line below.



2. What is the absolute value of zero? ____

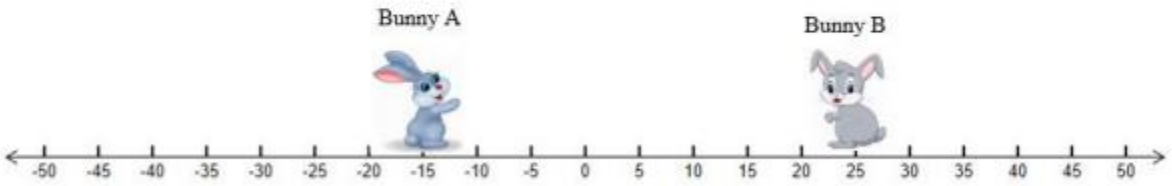
Why? _____

_____

3. Identify the two true statements below.

$\|6\| = -6$	$\|-8\| = 8$	$-4 = \|4\|$
$\|-10\| = -10$	$\|9\| = -9$	$\|52\| = 52$

4. Bunny A and Bunny B are hopping on the number line below. What point should Bunny B hop to in order to have the same absolute value as Bunny A?

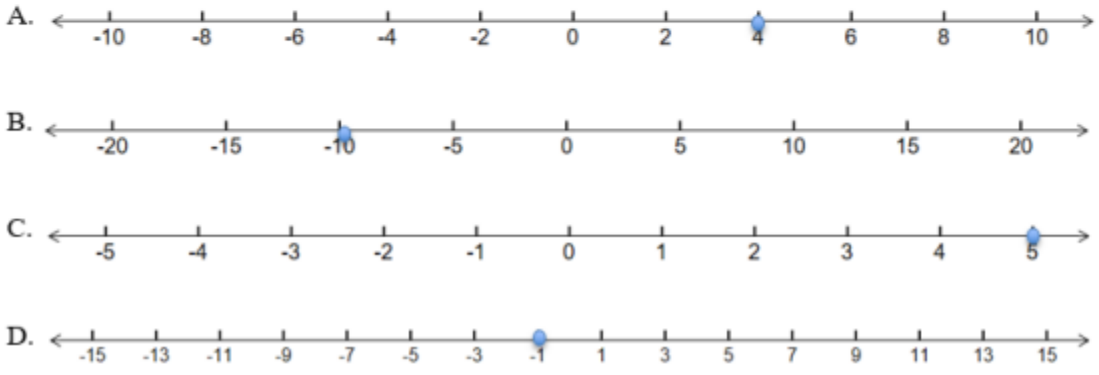


Bunny B should hop to point _____.

5. Absolute value is –

A. the distance from zero.
B. shown with the symbols | |.
C. never a negative value
D. all of the above.

6. Which point on the number lines below represents the greatest absolute value?



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6.4

1. Use your knowledge of perfect squares to complete the table below.

Square Root	1	3		11		20
Perfect Square	1	9	49		196	

2. Identify all of the answer choices that are equivalent to 6^4.

$6\times6\times6\times6$	4^6	6×4	1,296	24×4
24	36×36	$6\times6\times6\times6\times6$	216×6	7,776

3. What is the value of 10^6?

$$10^1 = 10$$
$$10^2 = 100$$
$$10^3 = 1{,}000$$
$$10^4 = 10{,}000$$

A. 1,000
B. 100,000
C. 1,000,000
D. 10,000,000

4. Which best describes the numbers in the pattern below?

100, 121, 144, 169, …

A. square roots
B. perfect squares
C. scientific notation
D. exponential notation

5. Max placed the numeral 10,000 in the place value chart.

Ten Thousands	Thousands	Hundreds	Tens	Ones
1	0	0	0	0

What is 10,000 written in powers of 10?

A. 10^2 B. 10^3 C. 10^4 D. 10^5

6. Based on the pattern show below, what is the value of 4^5?

$$4^1 = 4$$
$$4^2 = 16$$
$$4^3 = 64$$

A. 20 B. 68 C. 256 D. 1,024

7. A pattern of increasing perfect squares is shown.

9, 16, 25, 36, 49, 64, …

What number comes next in this pattern?

A. 100 B. 81 C. 79 D. 65

8. How should 10^6 be written in a place value chart?

A.

Thousands	Hundreds	Tens	Ones
1	0	0	0

B.

Ten-thousands	Thousands	Hundreds	Tens	Ones
1	0	0	0	0

C.

Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones
1	0	0	0	0	0

D.

Millions	Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones
1	0	0	0	0	0	0

2016 Mathematics Standards of Learning
Algebra Readiness Formative Assessment

6.6b

1. **Students in Mr. Manley's class lose three points on their grade, every time that they forget to turn in their homework.**
   a. **What integer represents the change in Erika's grade if she forgets her homework 5 times?**
   b. **What would Erika's grade end up to be if it had started at 82?**
   c. **If Subashni's grade ended up being 59, what would it have been if she had not missed seven homework assignments?**

2. **Emily enters an elevator on the 3rd floor and rides it up six floors. She then rides the elevator down three floors, and then back up two floors. When she finally exits the elevator, on what floor is she?**

3. **If the temperature during the day is 6^0 and the temperature drops 15^0 after sunset, what is the temperature at night?**
   A. -9^0
   B. -6^0
   C. 9^0
   D. 21^0

4. **Linda climbed a mountain to a height of 2,325 meters above sea level. Janice hiked down a canyon that is 37 meters below sea level. How much higher was Linda than Janice?**
   A. -2,288 meters
   B. -2,288 meters
   C. 2,288 meters
   D. 2,362 meters

5. **Francie had $250 in her savings account. For six months in a row, she withdrew $30 each time. How much money did she have in her account at the end?**
   A. $70
   B. $110
   C. $180
   D. $430

2016 Mathematics Standards of Learning
Algebra Readiness Formative Assessment

6.6c – NO CALCULATOR

1. **The work of three students in Mrs. Wray's 6th grade class is shown below:**

Abby's work	Ben's work	Charice's work
$2-12\div6\bullet2$ $2-2\bullet2$ $0\bullet2$ 0	$2-12\div6\bullet2$ $2-2\bullet2$ $2-4$ -2	$2-12\div6\bullet2$ $2-12\div12$ $2-1$ 1

- **Which student calculated the problem correctly?**
- **What was their solution**
- **Identify the mistakes made by the other two students**

2. **Which of the following has a value of -2**

$\frac{5+3}{4}$	$\frac{7-11}{2}$	$-4(9-3)\div12$
$\frac{2^3}{-4}$	$\lvert16-18\rvert-4$	$5(9-6)\div15$

3. **Using the order of operations, what is the second operation that should be formed in the problem below –**

$$4^2+(10-7)\bullet3$$

A. 4^2

B. (10-7)

C. $3\bullet3$

D. $16-9$

4. **Evaluate** $\frac{18}{9}+2(3+4)$

A. 12

B. 16

C. 17

D. 18