# **REAL NUMBER SYSTEM** CHEAT SHEET - A

CFASSILAING BEAF NAMBERS,  $\sqrt{A}$  number means what  $\sqrt{CO}$ number times itself will ROC give you the number inside the square root? **REAL NUMBERS** D Ε • Estimate non-perfect squares by using С a number line. В • For example, to find  $\sqrt{80}$ , find the two closest perfect squares.  $\sqrt{64}$ √81 8 A. NATURAL: positive counting numbers starting with 1 • The number line above shows it would B. WHOLE: positive counting numbers starting with 0 be slightly less than 9, or 8.9. C. INTEGER: whole numbers and their opposites • If given the area of a square, the side D. RATIONAL: fractions, repeating decimals and length of the square can be found by terminating decimals taking the square root of the area. E. IRRATIONAL: non-terminating or non-repeating  $\sqrt{\text{AREA}} \rightarrow$ AREA decimals, and non-perfect squares FRACTIONS TO DECIMALS: 5 **LRACTIONS**  $\frac{2}{q} = 0.\overline{2}...$   $\frac{13}{qq} = 0.\overline{13}...$   $\frac{4}{33} = 0.\overline{12}...$   $\frac{1}{11} = 0.\overline{09}$ **DECIMALS TO FRACTIONS:** 

Name

Date

Pd

- $0.\overline{4} = \frac{4}{q}$   $0.\overline{47} = \frac{47}{qq}$   $0.\overline{15} = \frac{5}{33}$   $0.\overline{54} = \frac{6}{11}$
- Put numbers in the same form first!
- For example, convert numbers to decimals before ordering.

LEAST TO GREATEST: INCREASING, ASCENDING

**GREATEST TO LEAST:** DECREASING, DESCENDING

ORDERING NUMBERS

REAL NUMBER SYSTEM QUICK CHECK

Ν	lar	n	е

Date

			-								
1. Which of the following	points best represent	s√106 ?		1. (	A	圆	(	$\mathbf{\hat{c}}$	D		
	A R	- D		2. (	Ð	G	ŀ	Ð	J		
←		● <b>●</b>   →		3. (	A	圆	(		D		
9	10	II		4. (	Ð	G	ŀ	Ð	J		
				5. (	A	圆	(		D		
A. Point A	<b>B.</b> Point B	<b>C.</b> Point C	<b>D.</b> Point D	6. (	Ð	G	ŀ	Ð	J		
				7. (	A	圆	(	$\mathbf{\hat{c}}$	D		
2. Isabella is comparing t	he values below. Whic	ch list shows the valu	es in descending	8. (	Ē	G	ŀ	Ð	J		
order?			J	9. (	A	圆	(	$\mathbf{\hat{c}}$	D		
	7.42.7 <del>7</del> .79%.	$\sqrt{48}$		10.	Us	e th	ie g	rid I	belov	۷.	
	, , , , , , , , , , , , , , , , , , ,										
<b>F.</b> 7 <sup>7</sup> / <sub>0</sub> , 7.42, √48, 79%		<b>H.</b> 79%, 7 <sup>7</sup> / <sub>0</sub> , 7.42, √48	8	$\oplus$	0	0	0	0		0	0
$c \sqrt{49} z^7 z 42 z00$		$17427^{7}\sqrt{49}70\%$	,	Ξ	() ()	(U) (D)	$\bigcirc$	$\bigcirc$		บ	
<b>G.</b> V48, 1 <del>g</del> , 1.42, 19%		<b>J.</b> 1.42, 1 <del>g</del> , <b>v</b> 40, 19%	D		3	3	3	لک (3)		2) 3)	3
3. Everett measured the w	eight of a substance	as a repeating decima	al greater than		<u>ل</u>	<u>ل</u>	<u>Щ</u>	<u>ل</u>		9 9	4
one. Which of the followin	g could be the weight	of the substance?	5		5	5	5	5	(	5	5
$\Delta \frac{26}{26}$ pounds	$B = \frac{8}{2}$ pounds	$C = \frac{31}{2}$ pounds	$D \frac{100}{100}$ pounds		6	6	6	6		6	6
<b>7.</b> 25 pounds	<b>D.</b> 4 pounds	<b>0</b> . 33 pounds	<b>D</b> . 99 pounds		$\bigcirc$	$\bigcirc$	7	$\bigcirc$	(	1	7
4. A square room in Ambe	r's home has an area	of 128 square feet. W	Vhich is		8	8	8	8		8	8
the best estimate of one s	ide length of the room	ר?			(9)	(9)	(9)	(9)		9)	(9)

**G.** 11.3 feet, because  $\sqrt{128}$  is between 11 and 12.

J. 10.9 feet, because  $\sqrt{128}$  is between 10 and 11.

5. Jamal needs the order the four cards shown in increasing order. Which would be the correct order of the cards?

A. Card D, Card A, Card B, Card C

**F.** 32 feet, because 128 ÷ 4 = 32.

B. Card A, Card D, Card C, Card B

C. Card C, Card B, Card A, Card D

D. Card B, Card A, Card D, Card C



**H.** 64 feet, because  $\sqrt{128} = 64$ .



EXPONENTS AND SCIENTIFIC NOTATION

CHEAT SHEET - A

Date

Name\_\_\_\_\_



## EXPONENTS AND SCIENTIFIC NOTATION QUICK CHECK

Name \_\_\_\_\_

Date\_\_\_\_\_

- 1. Which of the following is true?
  - **A.**  $n^9 x n^3 = n^{27}$
  - **B.**  $\frac{n^{12}}{n^4} = n^8$
  - **C.**  $(n^6)^2 = n^8$
  - **D.**  $n^{-4} = -n^4$
- 2. Which value is equal to  $\sqrt[3]{729}$ ?

**F.**  $\sqrt[3]{729} = 243$  because  $729 \div 3 = 243$ .

**G.**  $\sqrt[3]{729}$  = 81 because 729 ÷ 3 = 243 and 243 ÷ 3 = 81.

**H.**  $\sqrt[3]{729}$  = 3 because (3<sup>3</sup>)<sup>2</sup> = 729.

**J.**  $\sqrt[3]{729}$  = 9 because 9 x 9 x 9 = 729.

3. Shantel read that the distance between the sun and Mercury is about 36,000,000 miles. Which of the following correctly represents this distance in scientific notation?

<b>A.</b> .36 x 10 <sup>8</sup>	<b>B.</b> 3.6 x 10 <sup>7</sup>	<b>C.</b> 3.6 x 10 <sup>-7</sup>	<b>D.</b> 3.6 x 10 <sup>6</sup>

4. In one year, a theme park had approximately  $2 \times 10^7$  guests. In the same year, a second theme park had approximately  $4 \times 10^6$  guests. Which is a true statement about the number of guests each theme park had?

F. The first theme park had about 5 times as many guests than the second.

- G. The second theme park had about 2 times as many guests than the first.
- H. The first theme park had about 10 times as many guests than the first.

J. The first theme park had about 2 times as many guests than the first.

5. Jett knows that  $x^2 = 64$ . Which of the following represents the step that Jett should take to find the correct value of x?

**A.** 64 ÷ 2 = x **B.** 64 ÷ 4 = x

- **C**. √64 = x
- D.  $\sqrt[3]{64} = x$

1. (	A	B			D		
2. (	F	G	ŀ	Ð	J		
3. (	A	B	(	$\mathbf{\hat{c}}$	D		
4. (	F	G	ŀ	Ð	J		
5. (	A	B	(	$\mathbf{\hat{c}}$	D		
6. (	F	G	ŀ	Ð	J		
7. (	A	B	(		D		
8. (	F	G	ŀ	Ð	J		
9. (	A	B	(	$\mathbf{\hat{c}}$	D		
10.	Us	e th	ne g	rid	belo	W.	
(+)	0	0	0	0		0	0
Θ	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		$\bigcirc$	$\bigcirc$
	2	2	2	2		2	2
	3	3	3	3		3	3
	4	4	4	4		4	4
	5	5	5	(5)		5	5
	6	6	6	6		6	6
	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		$\bigcirc$	$\bigcirc$
	8	8	8	8		8	8
	9	9	9	9		9	9

6. A single piece of paper weighs about 9.9 x 10 <sup>-3</sup> pound holds 300 pieces of paper. Find the total weight of the 5	s. Millie bought 5 packages of paper, and each package packages expressed in standard notation.
<b>F.</b> .0495 pounds <b>G.</b> 2.97 pounds	H. 14.85 pounds J. 16.5 pounds
7. Simplify the expression. Leave your answer as a variable raised to a positive exponent. $\frac{y^6}{y^{10}} \times y^2$	8. Andrew is at an airport where the largest airplane weighs 3 x 10 <sup>5</sup> pounds and the smallest airplane weighs 12,500 pounds. How many times heavier is the largest airplane than the smallest airplane?
A. $\frac{1}{y^8}$ B. $\frac{1}{y^6}$ C. $\frac{1}{y^2}$ D. $y^0$	F. 24 times G. 2.4 times H04 times J. 41 times
9. A professional basketball stadium can hold 21,000 people. A motor racing venue can hold 8.5 x 10 <sup>4</sup> people. How many more people can the motor racing venue hold than the basketball stadium? Express your answer in scientific notation.	10. Find the value of x needed to make the equation true. Record the value of x on the grid. $\frac{(7^{10})^2}{7^4} = \frac{7^9 \cdot 7^{10}}{7^x}$
<b>A.</b> 8.29 x 10 <sup>5</sup>	
<b>B.</b> 4.04 x 10 <sup>1</sup>	
<b>C.</b> 6.4 X 10 <sup>3</sup>	
<b>D.</b> 6.4 X 10 <sup>4</sup>	

# FUNCTIONS AND SLOPE CHEAT SHEET - A

Name \_\_\_\_\_

Date



# **LANCTIONS**



#### TO CHECK IF IT'S A FUNCTION:

✓ **ORDERED PAIRS & TABLES**: Each x-value must correspond with exactly one y-value. Check for repeating x-values.

**✓EQUATIONS**: See if any input would result in more than one output. For example,  $y^2 = x$  could result in <u>+</u> y.

✓ GRAPHS: Must pass the "vertical line test", where any vertical line touches the graph at only one point.





FUNCTIONS AND SLOPE QUICK CHECK

Name \_\_\_\_

Date

1. The table below shows Vanessa's height in inches for two different years.

YEAR (x)	2000	2005
HEIGHT (y)	48 inches	54 inches

Which is a correct conclusion about the rate of change shown in the table?

- A. Vanessa grows about 41.7 inches per year.
- B. Vanessa grows about 6 inches per year.
- C. Vanessa grows about 1.2 inches per year.
- D. Vanessa grows about .83 inches per year.

2. Ariel is emptying the water from a 10 gallon cooler. The graph shows the water level in the cooler as she empties it. Which best describes the rate of change shown in the graph?

10

8

7 6

3

water (Gallons)

- F. The water level decreases 10 gallons per second.
- G. The water level decreases 1 gallon every 2 seconds.
- H. The water level decreases 3 gallons every 2 seconds.
- J. The water level decreases 2 gallons every 3 seconds.









4

5 6 7 8 9 10

Time (Seconds)

23

1





- F. Asher buys gum for \$0.20 a piece.
- G. A daycare has six workers for every 30 children.
- H. Melanie reads 9 pages of her book every 45 minutes.
- J. Richie earns \$10 every 2 hours to pet sit for his neighbor.





Pd



### LINEAR EQUATIONS CHEAT SHEFT - A

Name \_\_\_\_\_

Date



## LINEAR EQUATIONS QUICK CHECK

Name \_\_\_\_

Date \_\_\_

1. Gym A charges a registration fee of \$75 plus \$35.75 per month for members. Gym B charges a registration fee of \$164 plus \$17.95 for members. After how many months would the total cost at Gym A and Gym B to be the same for members?

A. 10 months

B. 5 months

C.7 months

60

54

48

42 36

30

24 18

12

6

2 3 4 5 6 7 8 9 10

Hours

1

Earnings (\$)

D. The total cost will never be the same.

2. The graph below shows the number of hours that Rue and Zoe have been working at their jobs, as well as how much money they've earned. Which is a correct conclusion about the information shown in the graph?

- F. After 24 hours, Rue and Zoe will have earned the same amount of money.
- **G.** After 4 hours, Zoe will have earned \$12 more than Rue.
- H. After 4 hours, Rue will have earned \$12 more than Zoe.
- J. After 4 hours, Rue and Zoe will have earned the same amount of money.
- 3. Find the value of x needed to make the equation below true.

$$\frac{3}{4}(20x - 8) - 3 = 54$$

4. The area of the rectangle shown below is 36 square units. Set up and solve an equation to find the value of x.



••	A	B	((	)	D		
2.	2. E		ŀ	Ð	J		
3.	3. A		(	$\mathbf{\hat{c}}$	D		
4.	F	G	ŀ	Ð	J		
5.	A	B	(	$\mathbf{\hat{c}}$	D		
6.	F	G	ŀ	Ð	J		
7.	A	B	(		D		
8.	F	G	ŀ	Ð	J		
9.	A	B	(		D		
10	Us	e th	ne g	rid	belo	DW.	
$\oplus$	0						
$\odot$	0	0	0	0		0	0
Θ	() ()	0 ()	0	0 ()		0 ()	0 ()
Θ	0 () () (2)	0 () () (2)	0 () ()	0 () () (2)		0 () () (2)	0 () () (2)
Ξ	0 1 2 3	0 () (2) (3)	0 () (2) (3)	0 1 2 3		0 () (2) (3)	0 () (2) (3)
Θ	0 1 2 3 4	0 () (2) (3) (4)	0 () (2) (3) (4)	0 () (2) (3) (4)		0 1 2 3 4	0 () () () () () () () () () () () () ()
Θ	0 () () () () () () () () () () () () ()	0 1 2 3 4 5	0 1 2 3 4 5	0 () (2) (3) (4) (5)		0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()
Θ	0 1 2 3 4 5 6	0 () () () () () () () () () () () () ()		0 1 2 3 4 5 6		0 () () () () () () () () () () () () ()	() () () () () () () () () () () () () (
Θ	0 1 2 3 4 5 6 7			<ul> <li>①</li> <li>①</li> <li>②</li> <li>③</li> <li>④</li> <li>④</li> <li>⑦</li> </ul>		<ul> <li>(1)</li> <li>(2)</li> <li>(3)</li> <li>(4)</li> <li>(5)</li> <li>(6)</li> <li>(7)</li> <li>(7)</li></ul>	0 () () () () () () () () () () () () ()
Θ	0 () () () () () () () () () ()	0 1 2 3 4 5 6 7 8	0 () () () () () () () () () () () () ()	0 1 2 3 4 5 6 7 8		0 () () () () () () () () () () () () ()	0 0 3 4 5 6 7 8

5. Puppy A weighs $4\frac{1}{6}$ pounds at birth and gains $\frac{3}{4}$ pound	6. Which of the following equations would have no
each week. Puppy B weighs 5 $\frac{2}{3}$ pounds at birth and	Solution:
gains $\frac{1}{2}$ pound each week. After how many weeks will the puppies weigh the same amount?	F. 13 – 7x = -7x + 13
	$G.\frac{1}{3}(6x + 9) = 12$
A. 6 weeks	$1 + \frac{1}{2}(0 + 4) = 0 + 4$
C. 2 weeks	H. $\frac{1}{4}(8x + 4) = 2x - 4$
D. 7 weeks	<b>J.</b> $-10x + 5 = 3 - 10x + 2$
7. Which of the following can be determined from the graph	n below?
<b>A.</b> The ordered pair (6, 25) is a solution to both y = $-\frac{5}{2}x +$	40 and $y = \frac{5}{3}x + 15$ .
<b>B.</b> The ordered pair (25, 6) is a solution to both y = $-\frac{5}{2}x +$	40 and $y = \frac{5}{3}x + 15$ .
<b>C.</b> The ordered pair (6, 25) is a solution to both $y = \frac{5}{2}x + \frac{1}{2}$	40 and y = $-\frac{5}{3}x + 15$ . <b>20</b> <b>15</b> <b>10</b>
<b>D.</b> The ordered pair (6, 25) is a solution to both y = $-\frac{1}{2}x$ +	- 40 and y = $\frac{1}{3}$ x + 15. <b>5 1 2 3 4 5 5 1 2 3 4 5 5 1 2 3 4 5 6 7 8 9 10 10 10 10 10 10 10 10</b>
8. Solve the system of equations shown by substitution.	9. Kameron has a combination of quarters and nickels in
y = x - 5 5x + 2y = 4	number of quarters he has. If the total value of the coins is \$2.00, how many quarters does Kameron have in his wallet?
F (10 5)	<b>A</b> 15
<b>G</b> . (-1, -6)	B. 5
H. (0, -5)	<b>C.</b> 7
J. (2, -3)	<b>D</b> . 10
10. At Sunrise Donuts you can buy 6 donuts and 2 kolache. What is the price of one donut at Sunrise Donuts? Record y	s for \$8.84. One kolache and 4 donuts would cost \$5.36. our answer in the grid.
	J

### LINEAR RELATIONSHIPS CHEAT SHEET - A

Name

Date



WRITING EQUATIO SLOPE:  $\frac{1}{2}$ **Y-INTERCEPT**: 1 **EQUATION**:  $y = \frac{1}{2}x + 1$ SLOPE: 4 **Y-INTERCEPT:** -9 **EQUATION**: y = 4x - 9

Pd

N N S N C

• If an equation is linear, it will be written in

**LINEAR**: y = .75x - 11

**NON-LINEAR**:  $y = 3x^2 + 2$ 

• If a graph is linear, it will look like a



©Maneuvering the Middle LLC, 2017

# LINEAR RELATIONSHIPS QUICK CHECK

Name \_\_\_\_\_

Date

- 1. Which of the statements about the graph below is true?
  - A. The graph is non-linear and has an equation of y = -x + 18.
  - **B.** The graph is linear and has an equation of y = -x + 18.
  - C. The graph is linear and has an equation of y = -2x + 18.
  - D. None of the above statements are true.

2. The table below shows the amount that a catering company charges based on the number of people at an event. Which of the following equations shows the relationship between c, the amount the company charges based on p, the number of people at the event?

<b>F.</b> c = 16p
<b>G.</b> c = 75p + 13
<b>H.</b> p = 13c + 75
<b>J</b> . c = 13p + 75

People (p)	Total Charge (c)
25	\$400
50	\$725
75	\$1,050
100	\$1,375

20

18

16 14

12

10

8 6

4

2

23

1

4 5 6 7 8 9 10

3. Which of the following gives an example of an equation that is non-linear?

**A.** 
$$y = x^2 - 1$$
 **B.**  $y = 2x - 1$  **C.**  $y = \frac{x}{4}$ 

4. Kit charges customers an initial fee plus a certain amount per hour to walk their pets. The table below shows the amount of money that Kit earns at her job based on the number of hours

that she works. Which of the following equations represents a scenario where Kit would charge customers a higher hourly rate to walk their pets than what is shown in the table?

F. y = 7.25x + 20 G. y = 8x + 10 H. y = 7.5x J. y = -10x + 15

1.	A	B	(	$\mathbf{C}$	D		
2.	F	G	ŀ	Ð	J		
3.	A	B	(	$\mathbf{\hat{c}}$	D		
4.	F	G	ŀ	Ð	J		
5.	A	B	(	$\mathbf{\hat{c}}$	D		
6.	F	G	ŀ	Ð	J		
7.	A	B	(	$\mathbf{\hat{c}}$	D		
8.	F	G	ŀ	Ð	J		
9.	A	B	(	$\mathbf{\hat{c}}$	D		
10	. Us	e th	ne g	rid	belo	DW.	
			-				
+	0	0	0	0		0	0
(+) (-)	0 ()	© ①	0	0 ()		© ①	© ①
(+) (-)	0 () () ()	0 1) 2	0 1) 2	0 () () ()		0 1) 2	0 1) 2
÷	0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()		0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()
÷	0 () () () () () () () () () () () () ()	0 1) 2 3 4	0 1) 2 3 4	0 () () () () () () () () () () () () ()		0 1) 2 3 4	0 1) 2 3 4
÷	0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()		0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()
÷ •	0 1) 2 3 4) 5 6	0 () () () () () () () () () () () () ()	0 1) 2 3 4) 5 6	0 1 2 3 4 5 6		0 () () () () () () () () () () () () ()	0 1 2 3 4 5 6
÷ ()	0 () () () () () () () () () () () () ()	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7		0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
÷ •	0 1 2 3 4 5 6 7 8	0 0 2 3 4 5 6 7 8	0 1 2 3 4 5 6 7 8	0 1 2 3 4 5 6 7 8		0 0 2 3 4 5 6 7 8	0 1 2 3 4 5 6 7 8



HOURS	EARNINGS (\$)
0	15
1	22.5
2	30
3	37.5

<ul> <li>5. Find the slope and the y-intercept of the linear function shown below.</li> <li>A. Slope: <sup>5</sup>/<sub>2</sub></li> </ul>	6. Allen buys the same number of baseball cards each month to add to a card collection he was given. Use the table to determine how many baseball cards he was given and how many he buys each month.
y-intercept: -10	Months 2 5 7 10
B. Slope: $\frac{1}{4}$ y-intercept: -10	<b>Cards</b> 44 80 104 140
C. Slope: $\frac{1}{4}$ y-intercept: 4 D. Slope: $-\frac{5}{2}$ y-intercept: -10	<ul> <li>F. Allen was given 44 cards and he buys 36 cards each month.</li> <li>G. Allen was given 14 cards, and he buys 15 cards each month.</li> <li>H. Allen was given 20 cards, and he buys 12 cards each month.</li> <li>J. Allen was given 24 cards, and he buys 10 cards each month.</li> </ul>
7. Write an equation in slope-intercept form of the line the	nat passes through the points (4, 13) and (8, 18).
<b>A.</b> y = 2.5x + 3	
<b>B.</b> $y = 1.5x + 7$	
D. y = 1.25x + 8	
8. Which table shows a relationship between x and y wh 3?	ere y is always equal to 8 less than the product of x and
F. XY G. XY	H. XYJJ. XY
-5 -43 -5 -23	-5 -16 -5 23
-1 -11 -11	-1 -12 -1 11
3 21 3 1	3 -8 3 -1
7 53 7 13	7 -4 7 -13
9. Zane owes his dad money for his cell phone that he lost. So far, Zane has paid his dad \$23, and he will pay his dad an additional \$45 each month until he has repaid him for the phone. Which equation shows the relationship between m, the number of months that Zane has been making payments and t, the total	10. Preston needs to write an equation in slope- intercept form to represent the relationship between x and y in the table below. What will be the value of the y-intercept in his equation? Record your answer on the grid.
amount he has paid his dad?	<b>x</b> 2 4 6 8
<b>A</b> .t = 45m + 23	<b>y</b> -9 -6 -3 0
B. m = $45t + 23$ C. t = $23m + 45$ D. t = $68m$	

## ANGLE RELATIONSHIPS CHEAT SHEET - A

Name \_\_\_\_\_

Date\_\_\_\_

Pd

# PARALLEL LINES AND TRANSVERSALS

When parallel lines are cut by a transversal, 8 different angles are formed.

An angle labeled "A" is **CONGRUENT** to any other angle labeled "A".

An angle labeled "B" is **CONGRUENT** to any other angle labeled "B".

An angle labeled "A" is SUPPLEMENTARY to any angle labeled "B".



## ANGLE RELATIONSHIPS QUICK CHECK

Name \_\_\_\_\_

#### Date \_\_\_\_

1. Two angles in a triangle measure  $(2.3x + 25)^\circ$  and  $(5.8x + 11)^\circ$ . What is the value of x if the two angles are congruent to one another?

**A.** x = 34.2 **B.** x = 10.3 **C.** x = 6.6 **D.** x = 4

2. Lines A and B below are parallel lines cut by transversal, t. Which of the following equations could be used to find the value of x?

F. 35x - 6 = 180
G. 9x + 24 = 180
H. 13x - 15 = 22x + 9
J. 13x + 9 = 22x - 15



7x + 2

4x + 7

3. Triangle JKL is shown below. Which of the following is not a true statement about the angles in the triangle?

- A. The sum of  $\angle J + \angle K + \angle L = 180^\circ$ .
- **B.** The measure of  $\angle J$  is 65°.
- **C.** The measure of  $\angle K$  is 89°.
- **D.** The measure of  $\angle L$  is 43°.

4. The top of Lucy's dining table is parallel to the floor as shown. Using the two marked angles, write and solve an equation to find the value of x.



5. Jose constructed Triangle DCE, where  $m \angle D = 103^{\circ}$  and  $m \angle C = 22^{\circ}$ . Remy constructed triangle PQT, where  $m \angle Q = 22^{\circ}$ , and  $m \angle T = 55^{\circ}$ . Are the two triangles similar to one another?

A. Yes, because two pairs of corresponding angles in the triangles are congruent.

- B. No, because none of the corresponding pairs of angles in the triangles are congruent.
- **C.** No, because 103 + 22 ≠ 22 + 55.
- **D.** There is not enough information to determine if the two triangles are similar to one another.

1. (	Ð	G	U	رم	U		
2. E		G	ŀ	Ð	J		
3. A		B	(	$\mathbf{\hat{c}}$	D		
4. (	F	G	ŀ	Ð	J		
5. (	A	B	(	$\mathbf{\hat{c}}$	D		
6. (	F	G	ŀ	Ð	J		
7. (	A	B	(	$\mathbf{\hat{\mathbf{C}}}$	D		
8. (	F	G	ŀ	Ð	J		
9. (	A	B	(	$\mathbf{\hat{c}}$	D		
10.	Us	e th	ne g	rid	belo	SW.	
( + )	0	0	0	0		0	0
$\odot$	$\bigcirc$	$\bigcirc$	$\bigcirc$			$\bigcirc$	$\bigcirc$
	2	2	2	2		2	2
	3	3	3	3		3	3
	4	4	4	4		4	4
	5	5	5	5		5	(5)
	6	6	6	6		6	6
	$\bigcirc$	$\bigcirc$	$\bigcirc$	7		$\bigcirc$	$\bigcirc$
	8	8	8	8		8	8

Pd

 $\bigcirc$ 

 $\bigcirc$ 



# PYTHAGOREAN THEOREM

CHEAT SHEET - A

Name

Date \_\_\_\_\_

#### Pd





**LEGS**: the two sides touching the right angle, known as "**a**" and "b".

**HYPOTENUSE**: the side opposite the right angle, known as "**c**".

The hypotenuse is always the longest of the three sides.

The converse states that IF  $\mathbf{a}^2 + \mathbf{b}^2 = \mathbf{c}^2$ , then the triangle is a **RIGHT** triangle.

#### EXAMPLE I:

Can the lengths 16, 30 and 34 make a right triangle? Plug it into the theorem:

$$16^2 + 30^2 = 34^2$$
  
 $256 + 900 = 1156$   
 $1156 = 1156$   
Yes!

# EXAMPLE 2:

Can the lengths 12, 12 and 24 make a right triangle? Plug it into the theorem:

```
12^2 + 12^2 = 24^2
144 + 144 = 576
  288 ≠ 576
      No!
```

# the pythagorean theorem

In any **RIGHT** triangle, the **SUM** of the **SQUARES** of the shorter sides (a and b) will equal the SQUARE of the longest side, c. In other words...

# $a^2 + b^2 = c^2$

To visualize the theorem, picture "a<sup>2</sup>", "b<sup>2</sup>" and "c<sup>2</sup>" as actual squares with side lengths equal to the side lengths of a, b and c:

The **AREAS** of the two smaller squares  $(a^2 + b^2)$ will always equal the **AREA** of the largest square (c<sup>2</sup>).

 $3^2 + 4^2 = 5^2$ 9 + 16 = 2525 = 25



# the coordinate plane

The Pythagorean Theorem can be used to find the diagonal distance between points on a graph. Create a **RIGHT** triangle where the diagonal is c, the **HYPOTENUSE**.



# **PYTHAGOREAN THEOREM** QUICK CHECK

Name \_\_\_\_

r

14 in.

Date\_\_\_\_

7 in.



- A. 21 inches
- **B.** 15.7 inches
- C. 6.5 inches
- D. 17.4 inches

J. 26 centimeters

2. Use the diagram below to find the approximate length of diagonal AD.



3. Titus is building a triangular frame with three pieces of wood that measure 3 inches, 5 inches and 10 inches. Which of the following is true about the frame?

- A. The frame will be a right triangle because 5(2) + 3(2) < 10(2).
- **B.** The frame will be a right triangle because  $5^2 + 3^2 < 10^2$ .
- **C.** The frame will not be a right triangle because  $5^2 + 3^2 \neq 10^2$ .
- **D.** The frame will not be a right triangle because  $5(2) + 3(2) \neq 10(2)$ .

4. The side view of a wall shelf in Luke's office is shown below. The diagonal support piece is 17 centimeters, and the piece against the wall is 8 centimeters. What is the approximate measure of w, the total width of the shelf?

F. 8 centimeters
G. 15 centimeters
H. 22 centimeters
8 cm.
17 cm.



5. The graph below shows the design for the front view of a doghouse that Jeremy plans to build. If each square on the graph represents 1 foot, find the perimeter of the design.	6. The base of the square pyramid shown has an area of 576 units <sup>2</sup> . If the slant height of the pyramid is 20 units, what is the height of the pyramid?
<ul> <li>A. 32 feet</li> <li>B. 26 feet</li> <li>C. 35 feet</li> <li>D. 28 feet</li> </ul>	<ul> <li>F. 16 units</li> <li>G. 13.4 units</li> <li>H. 18 units</li> <li>J. 31.2 units</li> </ul>
7. The model below is used to show the relationship betwee square that could be connected to side b of the triangle to	een the side lengths of a right triangle. Which describes the correctly complete the model?
<b>A.</b> A square with side lengths of 400 feet.	$ft.^2$
<b>B.</b> A square with side lengths of 100 feet.	
C. A square with side lengths of 50 feet. D. A square with side lengths of 20 feet.	a 441 ft. <sup>2</sup>
	a
8. Neil wants to join three pieces of metal to form a right tr	iangle. Which of the following lengths could he use?
F. 4, 4 and 8 feet G. 7.5, 10 and 12.5 feet	H. 9, 11 and 23 feet J. 6, 12.5 and 96 feet
9. Find the total perimeter of the kite shown below. Round to the nearest tenth.	10. Greta takes a cab ride along Avenue F and Avenue G. Jack takes a cab ride along Avenue H. How many miles shorter is Jack's cab ride than Greta's? Record your answer on the grid.
A. 34 units B. 25.2 units C. 12.6 units D. 27.8 units	Avenue G 35 miles

©Maneuvering the Middle LLC, 2017

# VOLUME CHEAT SHEFT - A

VOLUME OF CYLINDERS >

Name \_\_\_\_\_ Pd Date FORMULA: V = Bhh Multiply the **AREA OF THE BASE** by the **HEIGHT** of the cylinder. BASE \*If given the diameter of the base, divide by 2 to find the radius. **B** = Area of the base  $(\pi r^2)$ volume Ot. r spheres



formula to find missing pieces of information.

**Ex.** I: A cylinder has a volume of 5,024 inches<sup>3</sup>. If the height of the cylinder is 16 inches, find the radius of the cylinder.

> $V = 3.14(r^2)(h)$  $5,024 = 3.14(r^2)(16)$  $314 = 3.14(r^2)$  $100 = r^2$ 10 = r

**Ex. 2:** A cone has a volume of 4,710 inches<sup>3</sup>. If the height of the cone is 20 inches, find the radius of the cone.

> $V = (1/3)(3.14)(r^2)(h)$  $4,710 = (1/3)(3.14)(r^2)(20)$  $14,130 = (r^2)(20)$  $4,500 = (r^2)(20)$  $225 = r^2$ 15 = r

VOLUME QUICK CHECK

### Solve each problem below, and use 3.14 for pi.

1. Which of the expressions below could be used to find the amount of space occupied by the cone?

A.  $\frac{1}{3}(3.14)(4.5^2)(14.25)$ B.  $\frac{1}{3}(3.14)(9^2)(14.25)$ C.  $\frac{1}{3}(3.14)(4.5^3)(14.25)$ D.  $(3.14)(4.5^2)(14.25)$ 

Name

Date

2. Which of the following descriptions correctly explains how to find the volume of the cylinder shown?

d = 10 in.

F. Multiply 360 in.<sup>2</sup> (the area of the base) by 10 in. (the height of the cylinder).

G. Add 157 in.<sup>2</sup> (the area of the bases) with 1130.4 in.<sup>2</sup> (the lateral surface area).

H. Multiply 314 in.<sup>2</sup> (the area of the base) by 36 in. (the height of the cylinder).

J. Multiply 78.5 in <sup>2</sup> (the area of the base) by 36 in. (the height of the cylinder).

3. A cylinder has a volume of 8,792 cubic units. If the height of the cylinder is 7 units, which of the following represents the radius of the cylinder?

- A. 10 units
- B. 20 units
- C. 40 units
- D. 15 units

4. Cindy has a cylindrical container in her kitchen with the measurements shown at the right. If ¾ of the space inside the container is filled with sugar, how many cubic inches of sugar are in the container?

- F. 602.88 in.<sup>3</sup>
- G. 452.16 in.<sup>3</sup>
- H. 803.84 in.<sup>3</sup>
- **J.** 200.96 in.<sup>3</sup>

	4 in.
12 in.	

6.	F	G	ŀ	Ð	J		
7.	A	B	(	$\mathbf{\hat{c}}$	D		
8.	F	G	ŀ	Ð	J		
9.	A	B	(	$\mathbf{\hat{c}}$	D		
10.	Us	e th	ne g	rid	belo	DW.	
$\oplus$	0	0	0	0		0	(
$\odot$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$		$\bigcirc$	(

(+)	0	0	0	0	0	0
Θ	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
	2	2	2	2	2	2
	3	3	3	3	3	3
	4	4	4	4	4	4
	5	5	5	(5)	5	5
	6	6	6	6	6	6
	7	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$	$\bigcirc$
	8	8	8	8	8	8
	9	9	9	9	9	9

\_\_\_\_\_

1. A

2. F

3. A

4. (F)

5. A

B

G

**B** 

G

**(B)** 

 $\bigcirc$ 

 $(\mathbf{H})$ 

 $\bigcirc$ 

(H)

 $(\mathbb{C})$ 

(D)

 $(\mathbf{J})$ 

(D)

 $(\mathbf{J})$ 

(D)

5. Oscar needs to fill a sphere shaped balloon with helium. If the balloon has a diameter of 8 inches, what is the total amount of helium that the balloon will hold to the nearest tenth?	6. Joyce has a cone shaped planter hanging on her back porch. If the planter has a radius 6.8 inches and a height of 12.2 inches, what is the total amount of soil that the planter will hold to the nearest tenth?
<b>A.</b> 2,143.6 in. <sup>3</sup>	F. 590.5 in. <sup>3</sup>
<b>B.</b> 714.5 in. <sup>3</sup>	<b>G.</b> 1,771.4 in. <sup>3</sup>
<b>C.</b> 267.9 in. <sup>3</sup>	H. 145.2 in. <sup>3</sup>
<b>D.</b> 150.7 in. <sup>3</sup>	<b>J.</b> 196.8 in. <sup>3</sup>
7. Stan is serving lemonade at the school's dance out of a cylindrical container with a diameter of 20 inches and a height of 36 inches. If the lemonade is poured into cone shaped cups with a radius of 2 inches and a height of 5 inches, how many full cups can be filled from the cylindrical container?	8. A cylinder shaped kid's pool has a diameter of 12 feet and a height of 2 feet. If each cubic foot holds 7.48 gallons of water, about how many gallons of water can the kid's pool hold?
<b>1</b> 180 cups	
B 270 cups	F. 2,255 gallons
$\mathbf{C}$ 540 cups	G. 6,764 gallons
D. 2,160 cups	H. 564 gallons J. 1,691 gallons
9. Erica has a sphere shaped bouncy ball with a diameter of 2 inches. Michelle has a sphere shaped bouncy ball with a diameter of 4 inches. To the nearest tenth, how much more space is occupied by Michelle's bouncy ball than Erica's?	10. A sphere has a volume of 7,234.56 units <sup>3</sup> . Using 3.14 for pi, find the radius of the sphere. Record your answer on the grid.
<b>A.</b> 29.3 in. <sup>3</sup>	
<b>B.</b> 33.5 in. <sup>3</sup>	
<b>C.</b> 4.2 in. <sup>3</sup>	
<b>D.</b> 12.4 in. <sup>3</sup>	

### TRANSFORMATIONS CHEAT SHEET - A

Name \_\_\_\_\_

Date\_\_\_\_

**CONGRUENCE**: the same size and shape (preserved by translations, reflections and rotations)

**ORIENTATION OF A FIGURE**: the direction a figure is facing on a coordinate plane (preserved by translations and dilations)

congruence and Orientation

TRANSFORMATIONS QUICK CHECK

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Triangle ABC is dilated by a scale factor of 1.5 to create triangle A'B'C'. Which of the following it not a true statement?

- A. The image is larger than the pre-image.
- **B.** The orientation of triangle ABC is preserved.
- C. Segment AB is congruent to segment A'B'.
- D. The angle measures in triangle ABC are equal to the angle measures in triangle A'B'C'.

2. Parallelogram JKLM shown below is going to be rotated 270° clockwise to create J'K'L'M'. Which rule describes this transformation?

 $F. (x, y) \rightarrow (-y, x)$  $G. (x, y) \rightarrow (-x, -y)$  $H. (x, y) \rightarrow (y, -x)$ 





3. Circle C shown below was dilated with the origin as the center of dilation to create Circle C'. Which rule represents the transformation?

A. $(x, y) \rightarrow (\frac{2}{7}x, \frac{2}{7}y)$	
$B.(x,y) \boldsymbol{\rightarrow} (\frac{7}{2}x,\frac{7}{2}y)$	
C. (x, y) → (x - 5, y - 5	5)
D. (x, y) → (x + 5, y + 5	5)



1. (	A	B	(	$\mathbf{\hat{c}}$	D		
2. (	Ð	G	ŀ	Ð	J		
3. (	A	B	(	$\mathbf{\hat{c}}$	D		
4. (	F	G	ŀ	Ð	J		
5. (	A	B	(	$\mathbf{\hat{c}}$	D		
6. (	F	G	ŀ	Ð	J		
7. (	A	B	(	$\mathbf{\hat{c}}$	D		
8. (	F	G	ŀ	Ð	J		
9. (	A	B	(	$\mathbf{\hat{c}}$	D		
10. Use the grid below.							
10.	00	Cu	ie g	nu	DEIC	JVV.	
10.			ie y			Jvv.	
÷	0	0	©	0		0	0
÷	0	0	© ①	0		0	0
(+) (-)	0 () () ()	0 () () ()	0 () () ()	0 () () ()		0 () () () ()	0 () (2
(†) (†)	0 () () () () () () () () () () () () ()	0 1 2 3	0 () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()		0 () () () () () () () () () () () () ()	0 () () () () () ()
(+) (-)	0 () () () () () () () () () () () () ()	0 1 2 3 4	0 1 2 3 4	0 1 2 3 4		0 1 2 3 4	0 () () () () () () () () () () () () ()
(†) (†)	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5		<ul> <li>(1)</li> <li>(2)</li> <li>(3)</li> <li>(4)</li> <li>(5)</li> </ul>	0 () () () () () () () () () () () () ()
() () ()	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 0 2 3 4 5 6	0 1 2 3 4 5 6		<ul> <li>0</li> <li>1</li> <li>2</li> <li>3</li> <li>4</li> <li>5</li> <li>6</li> </ul>	0 () () () () () () () () () () () () ()
÷	0 0 2 3 4 5 6 7	0 0 2 3 4 5 6 7	0 0 2 3 4 5 6 7	0 1 2 3 4 5 6 7		<ul> <li>0</li> <li>1</li> <li>2</li> <li>3</li> <li>4</li> <li>5</li> <li>6</li> <li>7</li> </ul>	0 (1) (2) (3) (4) (5) (6) (7)
() () ()	0 0 2 3 4 5 6 7 8	0 0 2 3 4 5 6 7 8	0 0 2 3 4 5 6 7 8	0 1 2 3 4 5 6 7 8		0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 (1) (2) (3) (4) (5) (6) (7) (8)

4. Which of the following statements is true?

- F. (x, y)  $\rightarrow$  (x 7, y + 2) represents a translation 7 units down and 2 units to the right.
- **G.** (x, y)  $\rightarrow$  (-x, -y) represents a rotation 180° clockwise.
- H. (x, y)  $\rightarrow$  (x + 3.5, y + 3.5) represents a dilation with a scale factor of 3.5.
- $J.(x, y) \rightarrow (-x, y)$  represents a reflection over the x-axis.

5. Which of the following statements is not true about the transformation shown at the right?

A. It is a dilation that can be represented by  $(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$ .

B. The original figure was reduced to create the image.

- **C.** The angle measures of triangle A'B'C' are ½ the angle measures of triangle ABC.
- **D.** Triangle A'B'C' is similar to triangle ABC.



6. Which of the following transformations does not preserve congruence?	7. Quadrilateral PQRS has coordinates P(-5, -2), Q(-2, -2), R(-4, -6) and S(-7, -6). Where is P' after quadrilateral PQRS is reflected over the x-axis?
F. (x, y) → (-x, -y)	A. (-5, 2)
G. (x, y) → (-y, -x)	B. (5, 2)
H. (x, y) → (x + 9, y + 9)	C. (5, -2)
J. (x, y) → (9x, 9y)	D. (-2, 5)



- F. A dilation followed by a reflection
- G. A rotation followed by a dilation
- H. A translation followed by a dilation
- J. A reflection followed by a translation
- 9. Triangle CDE is transformed to create triangle C'D'E'. The coordinates of the pre-image and the image are shown below.

C(-6, 8) D(-4, 8) E(-5, 9)

C'(-8, -6) D'(-8, -4) E'(-9, -5)

Which describes the transformation?

- A. Translation 2 units left and 14 units down
- **B.** Rotation 180° clockwise

C. Reflection over the x-axis

D. Rotation 270° clockwise



10. Triangle LMN was dilated to create L'M'N'. The coordinates of the pre-image and the image are shown in the table below.

PRE-IMAGE	IMAGE
L (0, 4)	L' (0, 10)
M (0, 8)	M' (0, 20)
N (5, 10)	N' (12.5, 25)

Find the scale factor that was used in the dilation. Record your answer on the grid. SCATTER PLOTS AND DATA CHEAT SHEET - A

Name \_\_\_\_\_

Date



Name \_\_\_

# SCATTER PLOTS AND DATA QUICK CHECK

Date

1. The two-way table shows the number of male and female students enrolled in each grade at Cassandra's middle school.

001.	MALE	FEMALE	TOTAL
6 <sup>th</sup> grade	116		
7 <sup>th</sup> grade		137	263
8 <sup>th</sup> grade	89		193
TOTAL			670

How many total female students are enrolled at Cassandra's middle school?

A. 98 B. 331 C. 339 D. 335

2. The scatterplot below shows the number of years of experience of 8 different wedding photographers and the number of weddings they photographed over the last year. Based on the scatter plot, what would be the best prediction of the number of weddings that a photographer with 7 years of experience would photograph in a year?

F.	41	
G.	57	
Η.	68	
J.	75	



A	B	) (	0	D		
Ð	G	) (	Ð	J		
A	B	) (	0	D		
Ð	G	) (	Ð	J		
A	B	) (	$\hat{\mathbf{C}}$	D		
F	G	) (	Ð	J		
A	B	) (	0	D		
8. Use the grid below.						
USE	ethe	e gr	a pi	eio	Ν.	
Use	e the	e gr		eio\	₩.	
0se		e gr (0)			N. ()	0
0 0 1	©	@ ①			N. () ()	0
0 (1) (2)	0 (1) (2)	@ () () (2)	0 () () ()		v. () () () ()	0 () () ()
0 1 2 3	0 () () (2) (3)	© ① ② ③	0 () () () () () () () () () () () () ()		v. () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()
0 1 2 3 4	() () () () () () () () () () () () () (	9 gr (0) (1) (2) (3) (4)	0 1 2 3 4		v. () () () () () () () () () () () () ()	0 1 2 3 4
0 (1) (2) (3) (4) (5)	0 1 2 3 4 5	9 0 1 2 3 4 5	0 0 0 2 3 4 5		v. () () () () () () () () () () () () ()	0 () () () () () () () () () () () () ()
0 1 2 3 4 5 6	0 1 2 3 4 5 6	9 gr (0) (1) (2) (3) (4) (5) (6)	0 0 0 2 3 4 5 6		<ul> <li>.</li> <li>.&lt;</li></ul>	0 1 2 3 4 5 6
	<ul> <li>A</li> <li>F</li> <li>A</li> <li>F</li> <li>A</li> <li>F</li> <li>A</li> <li>F</li> <li>A</li> </ul>	<ul> <li>A</li> <li>B</li> <li>F</li> <li>G</li> <li>A</li> <li>B</li> <li>A</li> <li>B&lt;</li></ul>	A       B       (         F       G       (         A       B       (         F       G       (         A       B       (         F       G       (         A       B       (         A       B       (         A       B       (         A       B       (         A       B       (	<ul> <li>A</li> <li>B</li> <li>C</li> <li>F</li> <li>G</li> <li>H</li> <li>A</li> <li>B</li> <li>C</li> <li>F</li> <li>G</li> <li>H</li> <li>A</li> <li>B</li> <li>C</li> <li>F</li> <li>G</li> <li>H</li> <li>A</li> <li>B</li> <li>C</li> <li>A</li> <li>A</li> <li>A</li> <li>B</li> <li>C</li> <li>A</li> <li>A&lt;</li></ul>	A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D	A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D         F       G       H       J         A       B       C       D

88

88

99999

#### YEARS OF EXPERIENCE

3. The table below shows the number of cats owned by 5 different individuals and the number of pounds of cat food each individual buys each month. Use the table to construct a scatter plot, and then choose the statement that best describes the data in the scatter plot.

- A. The data appears linear with positive association.
- **B.** The data appears linear with negative association.
- **C.** The data appears non-linear with positive association.
- D. The data appears non-linear with no association.

NUMBER OF CATS	FOOD/MONTH (LBS.)
2	10
4	21
1	6
3	17
5	25



8

(9)

(8)

4. The scatter plot shows different people's ages and the number of states they have visited. Based on the equation of the trend line shown, how many states would you predict someone who is 50 years old has visited?

- F.12 states
- G. 22 states
- H. 18 states
- J. 15 states

5. Which best describes the main difference between scatter plots X and Y shown below?

- **A.** X shows clustering while Y does not show clustering.
- **B.** X is non-linear while Y is linear.
- **C.** X shows negative association while Y shows positive association.
- D. X contains an outlier while Y does not contain any outliers.

6. The two-way table represents the types of drinks that were sold at Joe's coffee stand over the weekend, and whether each drink was hot or cold and what size the drink was. Based on the table, which of the following statements is true?

- F. Of the total drinks ordered, about 18% were size small.
- **G.** Of the cold drinks ordered, about 44% were size large.
- H. Of the medium drinks ordered, about 51% were hot drinks.
- J. Of the total drinks ordered, about 21% were size medium.

7. A scatter plot was created to show the relationship between the number of staff members and students at various schools. The scatter plot's trend line has an equation of y = 0.1x + 18, where y is the total number of staff members and x is the total number of students.

Use the equation to predict the number of students in a school with 120 staff members.

- A. 1.038 students
- **B**. 30 students
- C. 890 students
- **D.** 1,020 students

8. The two-way table shows the type of lunches ordered by teachers and students in the cafeteria yesterday. Of the total people who ordered in the cafeteria yesterday, find the relative frequency of teachers to the nearest percent. Record your answer on the grid.

TEACHER

PIZZA

SANDWICH		186	198	
SALAD	9	92		
TOTAL		479		

STUDENT





	НОТ	COLD	TOTAL
SMALL	64	81	145
MEDIUM	72	70	142
LARGE	46	32	78
TOTAL	182	183	365

12 STATES VISITED 10 8 6 4 2 10 15 20 25 30 35 5 PERSON'S AGE

TOTAL

209