

**SHOW ALL WORK ON SEPARATE PAPER**

Answers will be provided at a later date.

**REAL NUMBER SYSTEM**

Go back and try problems on Review 1 and Test 1.

1. Name the set(s) of numbers to which each number belongs by placing an X in the box.

	Natural	Whole	Integer	Rational	Irrational	Real
$\sqrt{25}$	x	x	x	x		x
38.27				x		x
-9			x	x		x
-5.153632...					x	x
$\sqrt{17}$					x	x
$\frac{5}{6}$				x		x
78.21				x		x
-38.0			x	x		x
0		x	x	x		x

2.	Provide an example of an integer that is not a whole number.	-13*
3.	Provide an example of an irrational number that contains a square root sign.	$\sqrt{2}$ *
4.	Provide an example of a whole number that is not a natural number.	0
5.	Provide an example of a rational number that is not an integer.	$\frac{2}{3}$ *

\* Many other answers are also possible.

**DECIMALS**

Go back and try problems on Review 1 and Test 1.

6.	Cindi loves Brussels sprouts. Brussels sprouts sell of \$1.55 a pound. If Cindi buys 2.73 pounds, what is her cost to the nearest penny (hundredth)?	\$4.23
7.	Cindi loves Brussels sprouts. Brussels sprouts sell of \$1.55 a pound. If Cindi buys \$15.00 worth of Brussels sprouts, how many pounds did she buy (nearest hundredth)?	9.68 lbs.

8.	Lance loves banana pudding. He bought \$17.34 worth of banana pudding, which was on sale for only \$0.80 a pound. How many pounds of pudding did he buy (to the nearest whole pound)?	22 lbs.
9.	Lance loves banana pudding. He bought \$17.34 worth of banana pudding, which was on sale for only \$1.10 a pound. If he went back and repeated this purchase two more times, how many total pounds of pudding did he buy (to the nearest whole pound)?	47 (48) lbs.
10.	Three roommates agreed to split the cost of food and rent evenly. Last month they spent a total of \$378.67 for food and \$536 for rent. How much should each roommate pay?	\$304.89

11.	$\frac{80}{0.4}$	200	12.	$44 \bullet 0.012$	0.528
13.	$\frac{40}{0.03}$	$1333.\bar{3}$	14.	$\frac{24}{0.05} - 1.26$	478.74
15.	$7.8 \bullet 2.03$	15.834	16.	$44 \bullet 0.012$	0.528

## INTEGERS

Go back and try problems on Review 2 and Test 2.

17.	If you add three negative integers, the answer will always/never/sometimes be negative.	always
18.	If you divide a negative integer by a negative integer and then subtract a negative integer, the answer will always/never/sometimes be negative.	never
19.	If you add two negative integers and two positive integers, the answer will always/never/sometimes be negative.	sometimes
20.	If you subtract a negative integer from a positive integer, the answer will always/never/sometimes be negative.	never
21.	If you divide a negative integer by a negative integer and then add a negative integer, the answer will always/never/sometimes be negative.	sometimes
22.	$-4 + 8^2 \bullet -3 - (-7)$ To simplify this expression, what would the third step be?	$-4 + -192$
23.	Simplify the expression in the question above.	$-189$
24.	When is the absolute value of a number not equal to the opposite of the number?	when $x > 0$

25.	$(-3)^2 - 6 \cdot 4 + 2$	$\frac{24 - 36 \cdot 4 \cdot 2}{-8 - -6}$	$7^1 \cdot 4 - 8 - (-5)^2$	$\frac{5^2 + -15}{-3 + 8^1}$	$(-3)^2 - 6 \cdot 4 + 2$
	Which expression simplifies to the smallest answer?				
26.	The temperature in Death Valley, California was 117 degrees above zero. The temperature in Anchorage, Alaska was 32 degrees below zero and then dropped another 15 degrees. What is the difference in temperatures after the drop in Anchorage?				164 degrees
27.	$-18 - (-5)$	$-13$	28.	$-26 - 16 + 12$	$-30$
29.	$-10 + 5 \cdot -7 + -4$	$-49$	30.	$78 - (-12) + -25 \cdot 2$	$40$

### SQUARE ROOTS

Go back and try problems on Review 1 and Test 1.

31.	$\sqrt{169} + \sqrt{1600}$	$53$
32.	Between what two integers is $\sqrt{316}$ ?	17 and 18
33.	$\sqrt{196} + \sqrt{45}$ is closest to what integer?	21
34.	Between what two integers is $-\sqrt{125}$ ?	-11 and -12

### FRACTIONS

Go back and try problems on Review 3 and Test 3.

35.	Place in order from least to greatest: $2\frac{1}{3}, 2\frac{4}{9}, \frac{13}{5}, 2\frac{3}{7}$	$2\frac{1}{3}, 2\frac{3}{7}, 2\frac{4}{9}, \frac{13}{5}$
36.	$\frac{2}{11}, \frac{1}{6}, \frac{3}{20}, \frac{5}{28}$	$\frac{1}{6}$
	Which fraction is the second smallest? Third smallest?	$\frac{5}{28}$
37.	Place in order from greatest to least: $-3\frac{2}{3}, -3\frac{8}{9}, -\frac{18}{5}, -\frac{15}{4}$	$-\frac{18}{5}, -3\frac{2}{3}, -\frac{15}{4}, -3\frac{8}{9}$

38.	The length of a rectangle is $\frac{3}{8}$ of its width. The width of the rectangle is $4\frac{2}{3}$ inches. What is the length of the rectangle? What is the perimeter of the rectangle?			$l = 1\frac{3}{4}$ in.	
				$p = 12\frac{5}{6}$ in.	
39.	In the problem above, what is the area of the rectangle?			$A = 8\frac{1}{6}$ in. <sup>2</sup>	
40.	Connie used $5\frac{1}{4}$ cups of milk to make $3\frac{1}{2}$ dozen brownies. If she only had $2\frac{1}{3}$ cup of milk, how many brownies could she bake?			$1\frac{5}{9}$ dozen	
41.	$\frac{4}{9} \cdot -\frac{63}{3}$	$-\frac{28}{3}$	42.	$\frac{9}{24} \div \frac{3}{4}$	$\frac{1}{2}$
43.	$\frac{5}{6} \div -\frac{2}{9}$	$-\frac{15}{4}$	44.	$3\frac{3}{5} \cdot 5\frac{5}{6}$	21
45.	$4\frac{2}{5} \div 5\frac{3}{5}$	$\frac{11}{14}$	46.	$x \div \frac{5}{12}$ if $x = -4$	$-\frac{48}{5}$
47.	$5\frac{1}{2}$ groups of $4\frac{1}{3}$		48.	How many groups of $\frac{1}{8}$ are in $2\frac{1}{24}$ ?	
$\frac{143}{6} = 23\frac{5}{6}$			$\frac{49}{3} = 16\frac{1}{3}$		
49.	$\frac{4}{9} + -\frac{2}{3}$	$-\frac{2}{9}$	50.	$-7\frac{4}{5} + \left(-2\frac{5}{7}\right)$	$-10\frac{18}{35}$
51.	$\frac{6}{7} \cdot -\frac{2}{3}$	$-\frac{4}{7}$	52.	$3\frac{1}{2} - 5\frac{1}{2} \div 2\frac{1}{2}$	$1\frac{3}{10}$
53.	If $\frac{3}{5}$ of $3\frac{3}{4}$ is added to $4\frac{1}{2}$ , what is the resulting value?			$\frac{27}{4} = 6\frac{3}{4}$	
54.	If $\frac{3}{5}$ of $-3\frac{3}{4}$ is subtracted from $-4\frac{1}{2}$ , what is the resulting value?			$-\frac{9}{4} = -2\frac{1}{4}$	
55.	There were $12\frac{3}{4}$ pounds of ham left over after the party at Becca's house. If Mark ate $\frac{2}{3}$ of the leftover ham, how many pounds did he eat?			$8\frac{1}{2}$ lbs.	
56.	There were $14\frac{3}{4}$ pounds of ham left over after the party at Becca's house. If Mark ate $\frac{2}{3}$ of the leftover ham, how many pounds were left?			$\frac{59}{12} = 4\frac{11}{12}$ lbs.	

## SCIENTIFIC NOTATION

Go back and try problems on Review 1 and Test 1.

57.	Write $(9.3 \cdot 10^6)$ in standard notation.	9,300,000
58.	Write $1.5 \cdot 10^{-3}$ in standard notation.	0.0015
59.	The United States produces $7.835 \times 10^7$ tons of pet food annually. Write this number in standard form.	78,350,000
60.	The number 0.00000045 is a very small number. Write this number in scientific notation.	$4.5 \cdot 10^{-7}$
61.	Mrs. Oliver estimated that there were 127,000,000 insects in her backyard. Write this number in scientific notation.	$1.27 \cdot 10^8$

## EQUATIONS

Go back and try problems on Review 4 and Test 4.

62.	Peeta has seven less than six times as many loaves of bread as Gale. Write an expression to represent the number of loaves of bread Peeta has.	$6g - 7$
63.	If Peeta has 17 loaves of bread, how many does Gale have?	$g = 4$ loaves
64.	Sam works 7.5 hours each weekend at a grocery store. What is his hourly wage if he earns \$39.00 each weekend?	\$5.20 / hour
65.	The sum of two consecutive positive integers is 55. What number is six less than twice the smaller integer?	48
66.	Simplify: $2(x + y) + 8(x + 3y)$	$10x + 26y$
67.	Simplify: $-5(2x - 8) - 4(3x + 4)$	$-22x + 24$
68.	Simplify: $2(x + y) - 8(x + 3y)$	$-6x - 22y$
69.	Simplify: $-3(2x - 7) + 4(4x + 3)$	$10x + 33$
70.	Simplify: $-5(x - 4) - (6x - 5)$	$-11x + 25$

71.	$5x + 4 = 34$	$x = 6$	72.	$4y - 9 = 35$	$y = 11$
73.	$3x - 7 = 8 + 4x$	$x = -15$	74.	$5(y - 1) + -3(y + 2) = 55$	$y = 33$
75.	$\frac{2}{3}y - 27 = -23$	$y = 6$	76.	$3(h - 7) = 57$	$h = 26$
77.	$x - 2\frac{4}{5} = -7\frac{1}{10}$	$x = -4\frac{3}{10}$	78.	$2m + (-12) = -21 + 13$	$m = 2$
79.	$x - 1\frac{3}{4} = -4\frac{1}{8}$	$x = -2\frac{3}{8}$	80.	$m + (-5) = -21$	$m = -16$
81.	The sum of four consecutive multiples of 4 is 72. Write an equation to solve for all four integers.		$x + x + 4 + x + 8 + x + 12 = 72$		12, 16, 20, 24
82.	The sum of four consecutive multiples of 5 is 110. Write an equation to solve for all four integers.		$x + x + 5 + x + 10 + x + 15 = 110$		20, 25, 30, 35
83.	Draw a scale/balance to model the equation $3x + 2 = 2x + 7$ . Then solve for $x$ .				
84.	Draw a scale/balance to model the equation $2x - 6 = 14$ . Then solve for $x$ .				
85.	Draw a scale/balance to model the equation $4x - 6 = 2x - 14$ . Then solve for $x$ .				
86.	Draw a scale/balance to model the equation $3x + 2 = 11$ . Then solve for $x$ .				

## INEQUALITIES

Go back and try problems on Review 5 and Test 5.

87.	<p>Solve for <math>x</math>, and graph the answer on a number line.</p> $3x - 5 < 13$	$x < 6$
88.	<p>Four friends went to dinner to celebrate making the honor roll. The total bill was less than \$56. If the cost was shared equally, what is the most each person could have paid?</p>	$4x < 56$ $x < \$14$

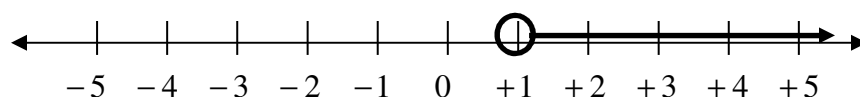
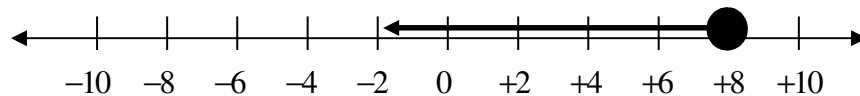
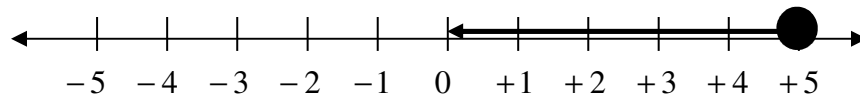
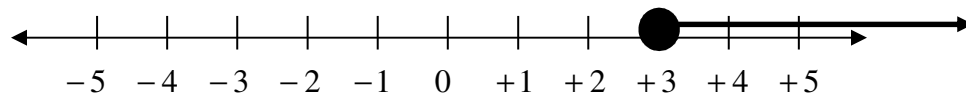
Solve each inequality. Graph the solution on the number line.

89.  $5\frac{2}{3} < b - \frac{5}{6}$   
 $6\frac{1}{2} < b$

90.  $-6x \leq -30$   
 $x \geq 5$

Solve the following inequalities and graph them on the number lines below.

91.	<p>Five less than six times the number of students in the gym was at least 13. How many students were in the gym?</p>	$x \geq 3$
92.	<p>The maximum age to ride the merry-go-round is 5.</p>	$x \leq 5$
93.	<p>If you add 15 points to the video game score of Mr. Mangham he will still have at most 23 points. How many points does he have now?</p>	$x \leq 8$
94.	<p>You must exceed a score of 1 on the exam to demonstrate you are smart at math.</p>	$x > 1$



**RATIOS, RATES, PROPORTIONS**  
Go back and try problems on Review 5 and Test 5.

95.	The scale of a map is $\frac{1}{2}$ inch:25 miles. If the map distance from Southlake to Hillsboro is $1\frac{1}{4}$ inches, how far is it to Hillsboro from Southlake?	62.5 mi
96.	The scale of a map is $\frac{1}{2}$ inch:25 miles. If the map distance from Southlake to Hillsboro is $2\frac{3}{4}$ inches, how far is it to Hillsboro from Southlake?	137.5 mi
97.	Cartons of eight cans of peaches are sold at Costco for \$6.96. What is the unit price of the peaches?	\$0.87 / can
98.	What is \$13.80 for 6 pounds expressed as a unit rate?	\$2.30 / lb

Which item is sold for a better unit rate (lower per unit price)?

		<b>UNIT RATE</b>
99.	Tomatoes: 3 lbs for \$4.65 or 5 lbs for \$7.90	\$1.55 / lb (3 lbs)
100.	Beans: 8 lbs for \$7.68 or 13 lbs for \$12.22	\$0.94 / lb (13 lbs)

Write a proportion to describe each situation and then solve.

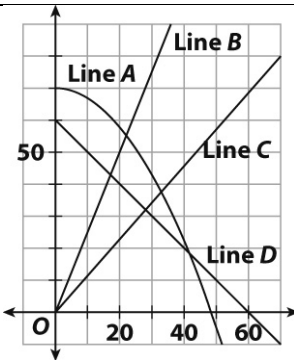
		<b>PROPORTION</b>	<b>ANSWER</b>
101.	Mr. Mangham can eat 14 Little Debbie's in 24 minutes. At that rate, how many can he eat in one hour?	$\frac{14}{24} = \frac{x}{60}$	$x = 35$ Little Debbie's
102.	Green Bay gained 320 yards in the first three quarters of the football game. At that rate, how many yards would they gain in all four quarters?	$\frac{320}{\frac{3}{4}} = \frac{x}{1}$	$x = 426\frac{2}{3}$ yards
103.	66 feet were painted in 6 minutes. How long did it take to paint 2750 feet?	$\frac{66}{6} = \frac{2750}{x}$	$x = 250$ min.
104.	Monica score 90 points in 12 games. At this rate how many points will she score in 30 games?	$\frac{90}{12} = \frac{x}{30}$	$x = 225$ pts.



105.	A radio tower casts a shadow 40 meters long at the same time that a tall tree casts a shadow 12 meters long. If the tree is 28 meters tall, how tall is the radio tower?	$x = 93.\bar{3}$ m
106.	What is the unit rate of a car that travels 161 miles on 7 gallons of gas?	23 mi/gal
107.	The results of a random survey showed that 30 out of 80 people plan to vote for Mr. Jones for city council. Find the total number of votes he will receive if 10,000 people vote.	3750 votes
108.	Ben can read an average of 21 pages during a 42-minute reading period at school. At this rate, how many hours will it take him to read a 900 page book?	30 hrs

### PROPORTIONAL RELATIONSHIPS

Go back and try problems on Review 5 and Test 5.

109.	<p>What value would complete the table below to make the relationship between the two quantities proportional?</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th><math>x</math></th> <th><math>y</math></th> </tr> </thead> <tbody> <tr> <td>2</td> <td>11.2</td> </tr> <tr> <td>3</td> <td>?</td> </tr> <tr> <td>4</td> <td>22.4</td> </tr> <tr> <td>5</td> <td>28.0</td> </tr> <tr> <td>7</td> <td>39.2</td> </tr> </tbody> </table>	$x$	$y$	2	11.2	3	?	4	22.4	5	28.0	7	39.2	$y = 16.8$
$x$	$y$													
2	11.2													
3	?													
4	22.4													
5	28.0													
7	39.2													
110.	 <p>Which line above shows direct variation with an equation of <math>y = 2.5x</math>?</p>	Line B												

111.

Zero

How many of the lines above demonstrate direct variation?

112. Katniss earns \$40 an hour shooting apples with her bow and arrow. List 4 ordered pairs one would find when graphing this relationship.

(1,40), (2,80)  
(3,120), (4,160)

113. The graph below shows the distance Chris travels over a number of hours.

John travels 180 miles in 4 hours. Who travels faster and by how much?

Chris  
5 mph

114. This graph shows a bicyclist moving at a constant rate.

This table shows another bicyclist.

Bicycle Rider B			
Time (h)	3	5	8
Distance (km)	72	120	192

How much faster is the unit rate of bicyclist A than bicyclist B?

6 km/hr

115.	<p style="text-align: center;"><b>Mr. Mangham's Guinea Pig-Walking Business</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Time (hr)</td> <td>2</td> <td>5</td> <td>8</td> <td>13</td> </tr> <tr> <td>Charge (\$)</td> <td>36</td> <td>90</td> <td>144</td> <td>234</td> </tr> </table> <p>Mr. Mangham charges a constant unit rate for walking people's guinea pigs. Using the table in the question above, what is the constant of proportionality for the data?</p>	Time (hr)	2	5	8	13	Charge (\$)	36	90	144	234	$k = 18$
Time (hr)	2	5	8	13								
Charge (\$)	36	90	144	234								
116.	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Account Balance (\$)</p> <p>Weeks</p> </div> <div style="text-align: center;"> <p>perimeter</p> <p>shape number</p> </div> </div> <p>Which graph above represents a proportional relationship? For the correct one, what is the constant of proportionality?</p>	Left graph $k = 20$										
117.	<p>The Seasick Sailboat Rental Company charges an hourly rate to rent sailboats. The costs are shown in the table below.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><b>Number of Hours (<math>t</math>)</b></td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> </tr> <tr> <td><b>Cost (<math>C</math>)</b></td> <td>\$7.70</td> <td>\$15.40</td> <td>\$23.10</td> <td>\$30.80</td> </tr> </table> <p>The Starboard Sailboat Rental Company charges hourly based on the equation, <math>C = 3.95t</math>. Which company has a lower unit rate? How much cheaper will a sailboat rental be for 12 hours?</p>	<b>Number of Hours (<math>t</math>)</b>	2	4	6	8	<b>Cost (<math>C</math>)</b>	\$7.70	\$15.40	\$23.10	\$30.80	Seasick \$1.20
<b>Number of Hours (<math>t</math>)</b>	2	4	6	8								
<b>Cost (<math>C</math>)</b>	\$7.70	\$15.40	\$23.10	\$30.80								
118.	<p>Use the data in the table. Which equation shows the number of trees planted per day? Use a 5-day workweek.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><b>Time (weeks)</b></td> <td>2</td> <td>5</td> <td>10</td> </tr> <tr> <td><b>Trees Planted</b></td> <td>130</td> <td>325</td> <td>650</td> </tr> </table> <p>A <math>y = 13x</math>      B <math>y = 65x</math>      C <math>y = 130x</math>      D <math>y = 325x</math></p>	<b>Time (weeks)</b>	2	5	10	<b>Trees Planted</b>	130	325	650	A		
<b>Time (weeks)</b>	2	5	10									
<b>Trees Planted</b>	130	325	650									

## PERCENTAGES

Go back and try problems on Review 6 and Test 6.

119. Convert the following fractions, decimals, and percentages.

FRACTION	DECIMAL	PERCENT	FRACTION	DECIMAL	PERCENT
$\frac{13}{20}$	0.65	65%	$\frac{67}{10000}$	0.0067	0.67%
$3\frac{57}{100}$	3.57	357%	$12\frac{8}{25}$	12.32	1232%
$\frac{1}{2000}$	0.0005	0.05%	$-\frac{23}{6}$	$-3.\overline{83}$	$-383.\overline{3}\%$
$\frac{5}{11}$	$0.\overline{45}$	$45.\overline{45}\%$	$\frac{9}{200}$	0.045	$4\frac{1}{2}\%$
$\frac{9}{100}$	0.09	9%	$-\frac{4}{25}$	-0.16	-16%
$\frac{1}{2500}$	0.0004	0.04%	$8\frac{7}{9}$	$8.\overline{7}$	$877.\overline{7}\%$

120.	Convert $6\frac{1}{3}\%$ to a decimal and a fraction	$0.0\overline{63}$	$\frac{19}{300}$
121.	Convert $8\frac{2}{11}$ to a decimal and a percentage.	$8.\overline{18}$	$818.\overline{18}\%$
122.	Convert $-6.74$ to a fraction and a percentage.	$-6\frac{37}{50}$	$-674\%$
123.	Of the 72 players in the soccer tournament, 24 made at least one goal. What percentage of the players did not score?	$66.\overline{6}\%$	
124.	There are 20 students in an accelerated math class. Four of them have their own graphing calculators. What percent do not own a graphing calculator?	80%	
125.	Cassandra got 25 out of 40 questions right on her test. What percentage of her test did she get right?	62.5%	
126.	The sales tax in Grapevine is 8.25%. If you spend \$120.00 at Academy on sporting goods, how much tax will you have to pay, and how much is the total amount?	\$9.90 \$129.90	
127.	Mr. Mangham sells Duke basketballs for \$25 each. If there is a 15% shipping charge added to the original price and 6% sales tax added to the original price, what is the total price for 4 basketballs?	\$121	
128.	Last month Nicole earned \$58.00 babysitting. She put 25% of it in her savings account. How much did she save?	\$14.50	
129.	In the problem above Nicole spent 30% of her total money on her sister for her birthday. How much did she spend on her sister?	\$17.40	

130.	18 is 25% of what number?	72
131.	9 is what percent of 20?	45%
132.	Find 16% of 40.	6.4
133.	72% of what number is 612?	850
134.	Find 225% of 83.	186.75
135.	Sam saved \$47 when he purchased a jacket at a clearance sale. If the sale price was 20% off the regular price, what was the regular price of the jacket?	\$235
136.	The cost of gasoline rose from \$2.50 to \$3.25. What was the percent increase in the price of gasoline?	30%
137.	The number of tarantulas in Mr. Mangham's room dropped from 40 to 8. What was the percent decrease in the number of tarantulas?	80%
138.	A TV dropped in price from \$500 to \$350. What was the percent decrease?	30%
139.	Last year the math club had 40 members. This year the club has 100 members. What is the percent increase?	150%