

Expeditionary Learning Middle School Summer Math Packet for Incoming 7th Graders

“Mathematics is not about numbers, equations, computations, or algorithms: it is about understanding.” —William Paul Thurston

Dear Incoming 7th Graders and Parents/Guardians,

The Expeditionary Learning Middle School 7th grade teachers wish you all a wonderful summer break. The mathematics teachers want all students to be as successful as possible in their middle school math program.

Here at ELMS, we push our students to strive for high achievement and to set new goals for themselves often. One goal is to be college and career ready; therefore, this math packet has been designed so that students will maintain and review their math skills during the summer.

The packet is divided into eight weekly sections. Students are to complete one section a week.

Answers are provided on our school website, <http://www.syracusecityschools.com/elms>, so that you can check your child's work. Please monitor the progress of your son or daughter so that the work is completed on a weekly basis, not the day before school begins in September. All students are required to complete this packet.

In September, your new Math teacher will be collecting these outlines for extra credit and prizes. To receive credit for this packet, all of the problems must be completed and **ALL SUPPORTING WORK MUST BE SHOWN!** Have a great summer! Thank you for your cooperation and support.

Sincerely,

7th Grade Teachers

Student's Name: _____

*Please sign below to verify that your child has completed the packet and all supporting work is shown.

Parent/Guardian's signature: _____

WEEK ONE:

1. Annie and Bernie built a maze for their hamsters. Annie's hamster completed the maze 7 seconds less than twice the time it took Bernie's hamster to complete the maze. If Bernie's hamster completed the maze in b seconds, which expression represents the time, in seconds, it took Annie's hamster to complete the maze?

A. $7 - 2b$

C. $2b + 7$

B. $2b - 7$

D. $\frac{2b}{7}$

2. A jeweler makes bracelets from silver chain. She made 7 bracelets that were each $5\frac{3}{4}$ inches long. She also made 3 bracelets that were each $6\frac{1}{2}$ inches long. What is the total length, in inches, of silver chain that the jeweler used to make all 10 bracelets?

F. $22\frac{1}{4}$

H. $59\frac{3}{4}$

G. 53

I. $122\frac{1}{2}$

3. A concession stand at a baseball field pays \$0.05 for each packet of mustard. How much will the concession stand pay for 7,000 packets of mustard?

4. On his whiteboard, Jamal correctly wrote a mixed number in lowest terms that was equivalent to 3.35. What number did Jamal write on his whiteboard?

A. $3\frac{3}{5}$

C. $3\frac{7}{20}$

B. 53

D. $3\frac{35}{100}$

5. Which of the following is NOT equivalent to $\frac{8}{10}$?

F. $\frac{80}{100}$

H. 0.8

G. 8%

I. 80%

6. The steps Laura used to solve an equation are shown below. What should Laura change in order to solve the equation correctly?

$$\begin{array}{l} 60 = 6x - 34 \\ \frac{60}{6} = \frac{6x}{6} - 34 \\ 10 = x - 34 \\ 10 + 34 = x - 34 + 34 \\ 44 = x \end{array}$$

A. Subtract 60 from both sides before dividing by 6.

B. Add 34 to both sides before dividing by 6.

C. Subtract 34 from both sides before dividing by 6.

D. Rewrite the equation as $6x = 60 - 34$.

7. Four customers at a deli each bought a different item. Each item had a different price per pound. The amount of the item each person bought and the total amount each person paid are shown below.

Francesca: 0.7 pound for \$11.19

Gail: $\frac{1}{2}$ pound for \$12.00

Henry: 0.62 pound for \$10.75

Isaac: $1\frac{1}{4}$ pounds for \$20.63

Which customer bought the item that had the lowest price per pound?

F. Francesca

H. Henry

G. Gail

I. Isaac

8. Simone has \$40 to buy baseballs for her team's practice. Each baseball costs \$3. Which inequality represents this situation?

A. $3b < 40$

C. $3b < 39$

B. $3b > 40$

D. $3b > 39$

9. Which inequality represents the solution to the inequality below?

$$26 < 6a$$

F. $a < 20$

H. $a < 4\frac{1}{3}$

G. $a > 20$

I. $a > 4\frac{1}{3}$

10. Four squares measuring 5 centimeters on each side are combined to create two different figures, as shown below.

Figure Y



Figure Z



Which statement correctly compares the perimeters of Figure Y and Figure Z?

A. The perimeter of Figure Y is equal to the perimeter of Figure Z.

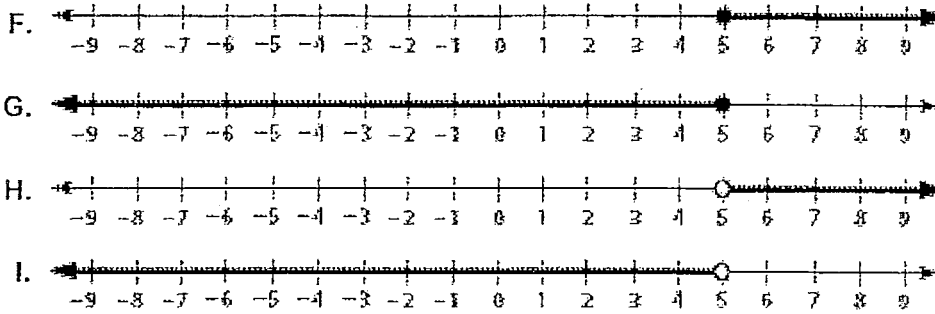
B. The perimeter of Figure Y is equal to 2 times the perimeter of Figure Z.

C. The perimeter of Figure Y is 2 centimeters less than the perimeter of Figure Z.

D. The perimeter of Figure Y is 10 centimeters less than the perimeter of Figure Z.

11. Which graph represents the inequality shown below?

$$x > 5$$



12. **SHORT RESPONSE** For each expression, explain how to use the properties of addition and multiplication to simplify the expression with the easiest computation possible. Show your work and name the properties you used.

Part A $47 \times 38 + 47 \times 62$

Part B $752 + (467 + 248)$

13. What is the missing number in the input-output table below?

Input	3	5	?	17
Output	16	22	31	58

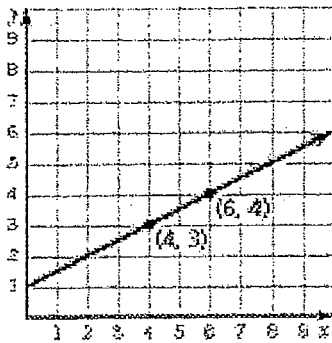
A. 8

C. 11

B. 9

D. 14

14. Which equation represents the line in the graph below?



F. $y = 4x - 3$

H. $y = \frac{1}{2}x + 1$

G. $y = 2x + 1$

I. $y = \frac{1}{2}x - 1$

15. **EXTENDED RESPONSE** The manager of an appliance store has 6 washing machines for sale. The prices of the six machines are shown in the box below.

\$450, \$400, \$450, \$599, \$675, \$500

The manager decides to also sell a seventh washing machine that has many additional features. The price of this machine is **greater than** \$1000. Describe how each of the following measures will change when the price of the seventh washing machine is included with the prices of the 6 original machines.

Part A the **mean** Mean _____

Part B the **mode** Mode _____

Part C the **range** Range _____

Part D the **median** Median _____

Copy and complete the statement using the specified property.

16. Commutative Property of Addition: $h + 11 = \underline{\quad?}$

17. Commutative Property of Multiplication: $12 \cdot k = \underline{\quad?}$

18. Associative Property of Addition: $21 + (9 + 8) = \underline{\quad?}$

19. Associative Property of Multiplication: $12 \cdot (5 \cdot 4) = \underline{\quad?}$

20. Multiplication Property of One: $18 \cdot w \cdot 1 = \underline{\quad?}$

21. Addition Property of Zero: $26 + c + 0 = \underline{\quad?}$

Use the distributive property to simplify the expression.

22. $8(a + 6)$

23. $7(p - 5)$

24. $10(9 + x)$

25. $6(2 + a + 9)$

WEEK TWO:

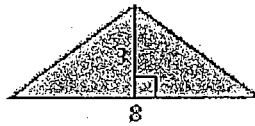
Simplify the expression. Identify the properties used.

26. $4(x - 3)$

27. $(3 \cdot x) \cdot 7$

28. Use a formula to find the area of the figure.

$A = \frac{1}{2} b h$



29. Tickets to a basketball game cost \$4 for adults and \$2 for children. Write an expression that gives the total cost for a adults and c children to attend the game. What is the total cost for a family of 2 adults and 3 children to attend the game?

Perform the indicated operation.

30. $\frac{7}{9} \times \frac{6}{5}$

31. 2.35×4

32. $3\frac{1}{8} \times 2\frac{4}{9}$

33. 0.35×1.2

34. $\frac{3}{5} \div \frac{1}{4}$

35. $2\frac{1}{4} \div \frac{3}{8}$

36. $3.6 \div 3$

37. $0.25 \overline{)7.38}$

Estimate the product or the quotient.

38. $\frac{5}{6} \times \frac{10}{13}$

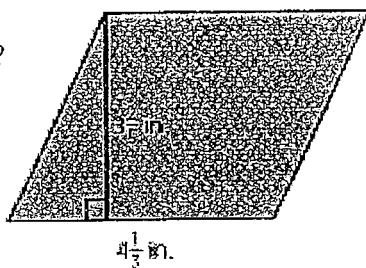
39. $\frac{15}{16} \div 2$

40. $3\frac{5}{8} \times 9\frac{1}{2}$

41. $67\frac{4}{7} \div 2$

42. $500 \div 4\frac{13}{14}$

43. Estimate the area of the parallelogram.
Did you overestimate or underestimate?



Write the decimal as a fraction or mixed number in simplest form.

44. 0.6

45. 3.36

46. 0.325

Write the fraction as a decimal.

47. $\frac{3}{5}$

48. $\frac{3}{8}$

49. $\frac{31}{25}$

50. A recipe for a batch of 3 dozen chocolate chip cookies calls for 3 cups of flour, 1 cup of sugar, and 2 cups of chocolate chips. How much of each ingredient should be used to make 2 dozen cookies?

WEEK THREE:

Estimate by rounding.

51. 6.3×7.2

52. $12\frac{1}{8} \div 2\frac{3}{4}$

53. 24% of 102

54. A twelve-pack of juice costs \$4.20. An eighteen-pack costs \$5.40. Which is the better buy?

Write the fraction or decimal as a percent.

55. $\frac{3}{8}$

56. 0.76

57. $\frac{6}{5}$

58. 3.25

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

60. 1.26

61. $1\frac{2}{3}$

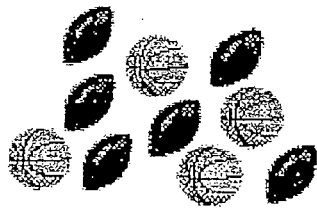
62. .032

63. Chris, Mary Beth, and Allison are discussing the number of oranges grown in Florida. Chris says that approximately 14.6% of the world's oranges are grown in Florida, Mary Beth says that 292 out of every 2000 oranges are grown in Florida, and Allison says that 0.146 of the world's oranges are grown in Florida. Who is correct? **Explain** your reasoning.

64. Use a number line to order 42%, $\frac{5}{12}$, and 0.425 from least to greatest.

65. A pizza shop offers 30% off the price of a large pizza every Tuesday night. If the regular price is \$25, what is the discounted price?

66. Write the ratio of basketballs to footballs as a fraction in simplest form.



67. You run 6 miles in 1 hour. At this rate, how long will it take you to run a marathon (approximately 26 miles)?

68. What are the mean, median, mode, and range for the data?

3, 8, 6, 6, 6, 4, 9, 9, 12

Mean (average)

Median (middle number in order)

Mode (most often)

Range (highest – lowest)

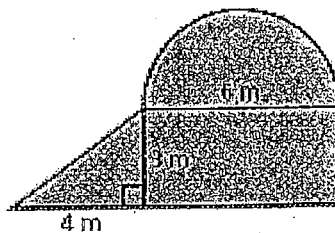
69. Katie makes 70% of her shots from the free-throw line. Can you determine how many consecutive free-throws she must make in order to increase her percentage to 75%? **Explain.**

70. Find the total area of the figure. Use 3.14 for π .

Area of rectangle: $A = bh$

Area of triangle: $A = \frac{1}{2}bh$

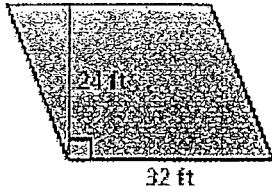
Area of semicircle: $A = \frac{1}{2}\pi r^2$



Use a formula to find the area of the figure.

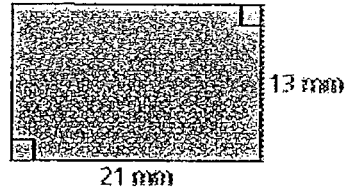
71.

$$A = b \times h$$

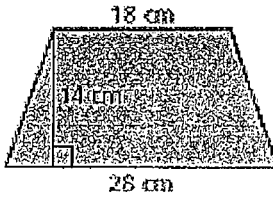


72.

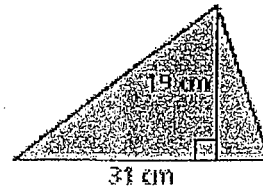
$$A = b \times h$$



73. $A = (b_1 + b_2) \times h \div 2$

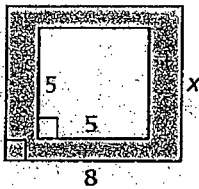


74. $A = b \times h \div 2$



Write a formula for the area of the shaded region in terms of x .

75.



WEEK FOUR:

76. A farmer builds a fence to enclose a rectangular pasture. He uses 160 feet of fence. Find the total area of the pasture if it is 50 feet long. $A = bh$

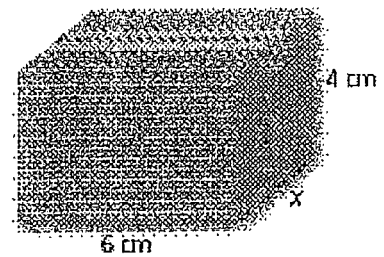
77. Find three possible sets of dimensions for a parallelogram whose area is 120 square feet.

Solve the equation.

78. $2s + 3 = 14s$

79. $c + 4c = 15$

80. Write and solve an equation to find the width of the box if its volume is 96 cubic centimeters. $V = lwh$



Write the word sentence as an inequality.

81. A number t is less than 7.

82. A number m is at least -3 .

Write the phrase as an expression.

83. twice a number n plus 6

84. 7 less than 3 times a number m

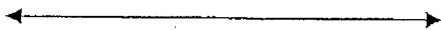
85. the difference of 25 and a number w

86. You have two cats. Each cat has a litter of 6 kittens. Write an expression that describes the total number of cats and kittens you have.

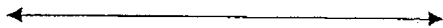
Solve the inequality. Graph the solution.

87. $\frac{b}{3} > 6$

88. $55 > 11a$



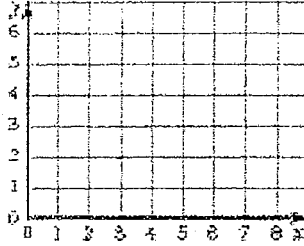
89. $8t > 24$



90. One cell phone plan costs \$15 per month plus \$0.10 per minute used. A second cell phone plan costs \$50 per month for unlimited use. Write and solve an inequality to find when the second plan is cheaper than the first.

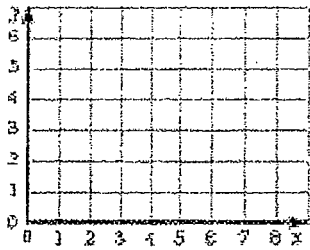
91. Draw a mapping diagram of the set of ordered pairs.

$(2, 3), (3, 5), (4, 1), (5, 2)$



92. The table shows the total cost of downloading x songs.

- a. Graph the data.



Songs	Cost (\$)
4	3
6	4.50
8	6

- b. Find a function to describe the data.

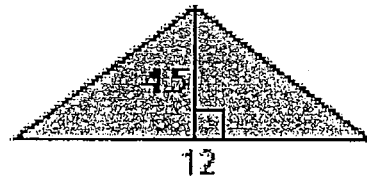
- c. At this rate, how much will it cost to download 12 songs?

Simplify the expression. Identify the properties used.

93. $4(x + 3)$

94. $(3 \cdot x) \cdot 7$

95. Use a formula $b \times h \div 2$ to find the area of the figure.



96. Tickets to a basketball game cost \$3.50 for adults and \$2 for children. Write an expression that gives the total cost for a adults and c children to attend the game. What is the total cost for a family of 2 adults and 3 children to attend the game?

Perform the indicated operation.

97. $\frac{3}{7} \times \frac{4}{6}$

98. 2.48×3

99. $4\frac{3}{8} \times 3\frac{2}{5}$

100. 0.45×3.2

WEEK FIVE:

Perform the indicated operation.

101. $\frac{6}{7} \div \frac{2}{3}$

102. $4\frac{3}{5} \div \frac{1}{8}$

103. $4.8 \div 2$

104. $0.35 \overline{)1.61}$

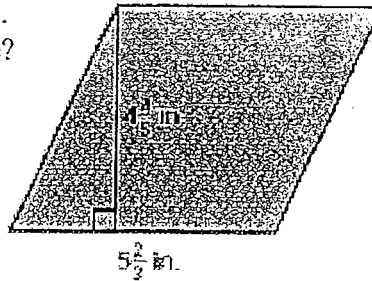
Evaluate the expression.

105. You buy 64 oranges for \$22.75. How much does each orange cost?

106. You and three of your friends go parasailing for \$128.40. You split the cost evenly. How much does each person pay?

107. The yearly precipitation of Key West, Florida is 38.94 inches. About how much precipitation falls each month?

108. Estimate the area of the parallelogram.
Did you overestimate or underestimate?



Write the decimal as a fraction or mixed number in simplest form.

109. 0.3

110. 4.68

111. 0.852

Write the fraction as a decimal.

112. $\frac{4}{5}$

113. $\frac{3}{16}$

114. $\frac{45}{20}$

115. A recipe for a batch of 3 dozen chocolate chip cookies calls for $3\frac{1}{2}$ cups of flour, 1 cup of sugar, and $2\frac{3}{4}$ cups of chocolate chips. How much of each ingredient should be used to make 2 dozen cookies?

Estimate by rounding.

116. 3.8×9.2

117. $13\frac{3}{8} \div 5\frac{3}{4}$

118. 24% of 22

119. A twelve-pack of juice costs \$3.90. An eighteen-pack costs \$5.49. Which is the better buy?

Write the fraction or decimal as a percent.

120. $\frac{5}{8}$

121. 0.04

122. $\frac{21}{5}$

123. 2.12

124. $1\frac{1}{3}$

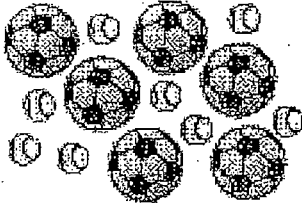
125. Chris, Mary Beth, and Allison are discussing the number of oranges grown in Florida. Chris says that approximately 14.6% of the world's oranges are grown in Florida, Mary Beth says that 292 out of every 2000 oranges are grown in Florida, and Allison says that 0.146 of the world's oranges are grown in Florida. Who is correct? **Explain** your reasoning.

WEEK SIX:

126. Use a number line to order 120% , $\frac{7}{6}$, and 1.17 from least to greatest.

127. A pizza shop offers 30% off the price of a large pizza every Tuesday night. If the regular price is \$25.50, what is the discounted price?

128. Write the ratio of baseballs to soccer balls as a fraction in simplest form.



129. You run 5 miles in 1 hour. At this rate, how long will it take you to run a marathon (approximately 26 miles)?

130. Determine the mean, median, mode, and range for the data.

12, 12, 10, 8, 9, 9, 9, 11, 11, 8

Mean= _____

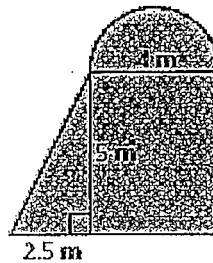
Mode= _____

Median= _____

Range= _____

131. Katie makes 65% of her shots from the free-throw line. Can you determine how many consecutive free-throws she must make in order to increase her percentage to 68%? **Explain.**

132. Find the area of the figure. Use 3.14 for π .



$$b \times h \div 2$$

$$\pi \times r^2 \div 2$$

$$b \times h$$

133. A farmer builds a fence to enclose a rectangular pasture. He uses 155 feet of fence. Find the **total area** of the pasture if it is 45.5 feet long.

Solve the equation.

134. $\frac{3}{4}s + 2 = 14$

135. $1.5c + c = 20$

Tell whether the ordered pair is a solution of the equation.

136. $y = x + 5$; $(2, 7)$

137. $y = 9x$; $(3, 12)$

138. $y = 2x + 3$; $(4, 12)$

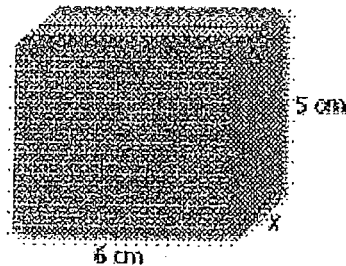
139. $y = \frac{x}{2} - 4$; $(8, 0)$

140. You are running at a rate of 6 miles per hour.

a. Write an equation that relates the distance d traveled in h hours.

b. How many miles do you run in 2 hours?

141. Write and solve an equation to find the width of the box if its volume is 80 cubic centimeters.



Write the word sentence as an inequality.

142. A number w is less than 5.5.

143. A number m is at least 7.

144. One cell phone plan costs \$12.50 per month plus \$0.15 per minute used. A second cell phone plan costs \$42.50 per month for unlimited use. Write and solve an inequality to find when the second plan is less expensive than the first.

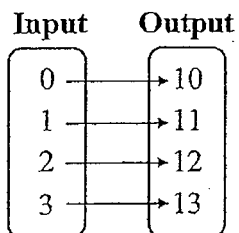
Songs	Cost (\$)
3	1.50
5	
7	3.50

145. Draw a mapping diagram of the set of ordered pairs. (input-output table here)

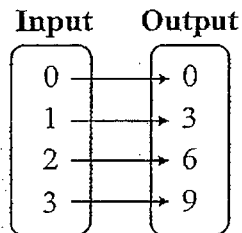
(0,1), (2,5), (4,1), (3,2)

Write an equation that describes the function.

146.



147.



Write an equation that describes the function.

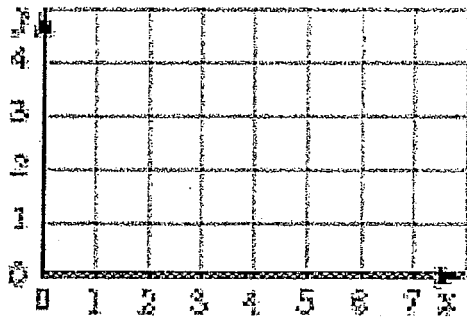
148. The output is eight less than the input.

149. The output is double the input.

150. The table shows the total cost of downloading x songs.

Songs	Cost (\$)
3	1.50
5	2.50
7	3.50

a. Graph the data.



b. Find a function to describe the data.

c. At this rate, how much will it cost to download 12 songs?

WEEK SEVEN:

Write the ordered pair that corresponds to the point.

151. Point *A*

152. Point *B*

153. Point *C*

154. Point *D*

155. Point *E*

156. Point *F*

157. Point *G*

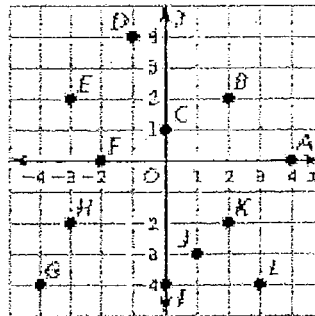
158. Point *H*

159. Point *I*

160. Point *J*

161. Point *K*

162. Point *L*



Put the data from the input-output table in a graph. Describe the pattern.

163.

Input, <i>x</i>	-1	0	1	2
Output, <i>y</i>	3	1	-1	-3

164.

Input, <i>x</i>	2	4	6	8
Output, <i>y</i>	-1	-1	-1	-1

165.

Input, <i>x</i>	-5	-3	-1	1
Output, <i>y</i>	1	3	5	7

166.

Input, <i>x</i>	-2	0	2	4
Output, <i>y</i>	5	2	1	2

Evaluate the expression when $x = 6$, $y = -2$, and $z = -3$.

167. $\frac{x}{2} + z$

168. $y - x$

169. $x + y + z$

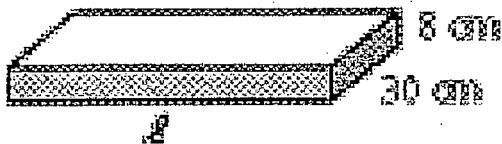
170. $|z|$

171. $z - y$

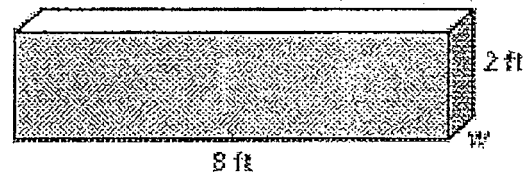
172. $|x + y|$

Write and solve an equation to find the missing dimension of the rectangular prism. $V = l \times w \times h$

173. Volume = $18,000 \text{ cm}^3$



174. Volume = 16 ft^3

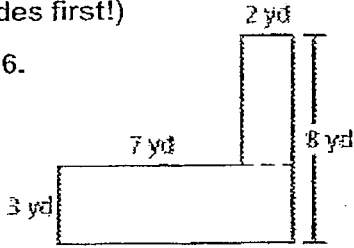


175. A cube has sides of length 2 meters. **Explain** what happens to the volume of the cube if the length of the sides is doubled.

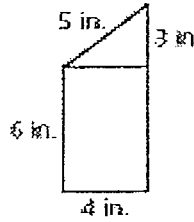
WEEK EIGHT:

Find the perimeter of the figure. (hint: Don't forget to find the missing sides first!)

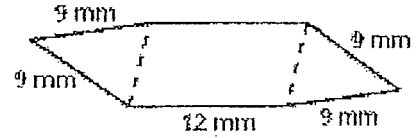
176.



177.



178.



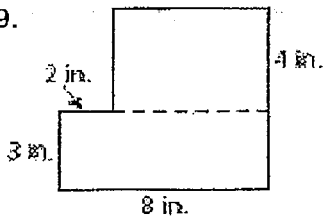
Find the area of the figure. Use these formulas:

$$A = l \times w$$

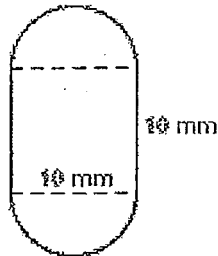
$$A = b \times h \div 2$$

$$A = \pi \cdot r^2$$

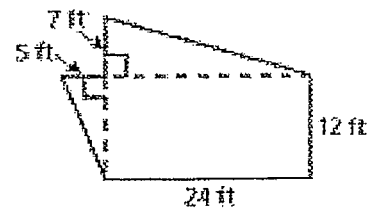
179.



180.



181.



Find the distance. Use $d = r \times t$

182. $d = \underline{\quad ? \quad}, r = 10 \text{ ft/sec}, t = 6 \text{ sec}$

183. $d = \underline{\quad ? \quad}, r = 25 \text{ mi/h}, t = 3 \text{ h}$

184. $d = \underline{\quad? \quad}$, $r = 14$ m/day, $t = 12$ days

185. $d = \underline{\quad? \quad}$, $r = 72$ ft/min, $t = 14$ min

186. At a grocery store, you buy four cans of soup for \$5. How much would you pay for six cans of soup?

Estimate the percent of the number.

187. 73% of 81

188. 2% of 190

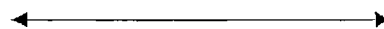
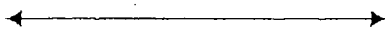
189. 5% of 220

190. 49% of 363

Use a number line to order the numbers from least to greatest.

191. $3\frac{2}{3}$, 362%, 3.66, $3\frac{3}{5}$, 36

192. 0.3, 27.3%, $\frac{11}{40}$, 28%, 0.27



Without finding the quotient, copy and complete the statement using $<$, $>$, or $=$.

193. $4.58 \div 0.57$? $45.8 \div 0.57$

194. $407.3 \div 19.4$? $40.73 \div 1.94$

195. You are saving your money to buy a guitar that costs \$275.75. You have \$40 and plan to save \$7.50 each week. Your uncle decides to give you an additional \$8 each week.

a. How many weeks will you have to save until you have enough money to buy the guitar? **Show** all work.

b. How many more weeks would you have to save to buy a guitar that costs \$339.75? **Explain** how you found your answer.