Integrated Math I Summer Review Packet

DUE THE FIRST DAY OF SCHOOL

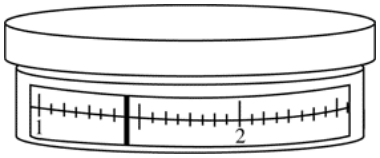
The problems in this packet are designed to help you review topics from previous mathematics courses that are essential to your success in Integrated Math II. **You are expected to bring this completed packet to class on the first day of school.** In addition, this packet will count as part of your first quarter grade. **Upon returning, you will be ASSESSED on the content of this packet**. All contents outlined in the packet are Integrated Math I objectives. Neatly **SHOW YOUR WORK** on a separate sheet of paper.

Write the number in scientific notation.

1.22,900

2.A planet has an approximate diameter of 1.92×10^3 kilometers. What is this number written in standard form?

3.The numbered divisions on the scale below indicate weight in pounds. What weight, in pounds, is indicated by the dark vertical marker on the scale? Write your answer as an improper fraction.

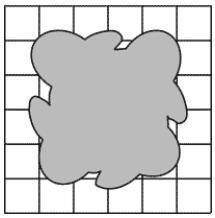


Complete the statement with <, >, or =.

4.$5.1\ km$? $5100\ m$

5.As a track athlete, Jackie competes in races that are 100 meters, 200 meters, and 400 meters long.
a. Write the length, in centimeters, of each race.
b. The average person has a walking step of about 50 centimeters. About how many steps would it take an average person to walk each race distance?

6.Janna decided to build a tiled patio with a small fish pond. A diagram of the patio and fish pond is shown below. Each tile measures 10 in. by 10 in.



ESTIMATE the area of the surface of the pond.

7.List all the factors of 36.

8.Is the number 60 prime or composite?

Write the fractions in simplest form. Tell whether they are equivalent.

9.$\frac{48}{84}, \frac{140}{245}$

10. The first patio that Jimmy made used $8\frac{1}{6}$ wheelbarrow loads of sand. The patio he is now making is $10\frac{2}{7}$ times as large as the first. How much sand will be used for this patio?

Find the quotient.

11. $\frac{6}{12} \div \frac{1}{4}$

12. $2\frac{1}{2} \div 3$

13. $\frac{1}{6} \div 3\frac{2}{3}$

14. The directions on a can that contains 6 fluid ounces of concentrated juice say to add 4 cans of water.
a. How many fluid ounces of water should be added?
b. How many cups of water should be added?

15. Consider the expression $2 - 4(5 + 3) - 4$.
a. Write an equivalent expression using the distributive property.
b. Evaluate each expression to show they are equivalent.

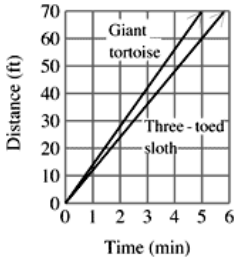
Write the ratio as a fraction in simplest form.

16. $\frac{8}{22}$

17. Write the ratio 2 : 18 in two other forms.

18. There are 58 employees at the head office of Jamco. Today, 12 people took the bus or train to work, 15 people walked to work, 6 people commuted by bicycle, 14 people carpooled, and 11 people drove alone. Write the ratio of people who took the bus or train to all of the people in the office in simplest form.

19. The graph shows the distance covered by a three-toed sloth and a Giant tortoise.



a. Find the rate of the three-toed sloth.
b. Find the rate of the giant tortoise.
c. Which has the greater rate of speed?

Use the cross products property to solve the proportion.

20. $\frac{76}{a} = \frac{44}{1.1}$

Tell whether the ratios form a proportion.

21. $\frac{0.4}{1.8}, \frac{2.8}{3.6}$

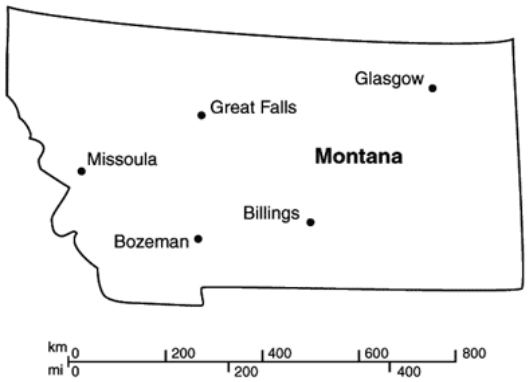
22. A worker on an assembly line takes 4 hours to produce 23 parts. At that rate how many parts can she produce in 16 hours?

23. Use the table showing free throw statistics for three basketball players in the 1999-2000 basketball season.

Player	Free Throws Made	Free Throws Attempted
Rasheed Wallace	233	331
Steve Smith	289	340
Damon Stoudamire	122	145

Suppose that next season each player attempts 120 free throws. Estimate how many free throws each player will make.

24. Use the scale to estimate the actual distance in miles between the cities. Find the distance between Great Falls and Glasgow.



Use the given information to find the new price.

25. Price before tax: $65.83
Sales tax: 7%

26. At the end of the summer, lawn furniture selling for $724 is marked 21% off. What is the dollar amount of the discount?

27. Your dinner bill for Friday night is $36.80. You leave a 15% tip and are charged a 6% sales tax. What was the total cost of the meal?

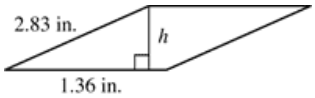
28. Find the simple annual interest earned on $600 invested at 7.5% for 4 months.

Find the side length of a square having the given area.

29. $A = 144\ \text{m}^2$

Approximate the height of the rhombus to the nearest hundredth unit. Then estimate the area to the nearest square unit.

30.

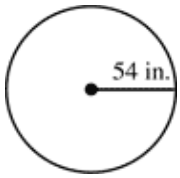


Find the diameter and the radius of the circle with the given circumference. Use $\frac{22}{7}$ or 3.14 for π.

31. $C = 58\frac{2}{3}$ m

Find the circumference of the circle.
Use $\frac{22}{7}$ or 3.14 for π.

32.



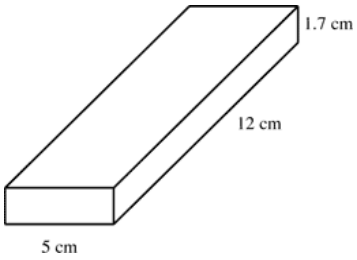
33. $d = 28$ in.

Find the area of the circle. Use 3.14 for π.

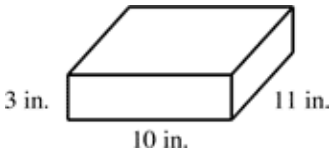
34. $d = 14$ in.

Find the surface area of the rectangular prism.

35.

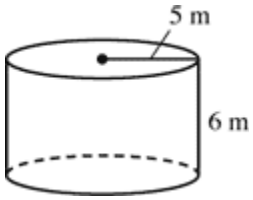


36. Cakery Bakery made a cake with the dimensions shown. If only the top and sides are frosted, how many square inches of the cake are frosted? (The figure may not be drawn to scale.)



Draw a net for the cylinder and label the dimensions. Then use the net to find the surface area of the cylinder. Use 3.14 for π.

37.

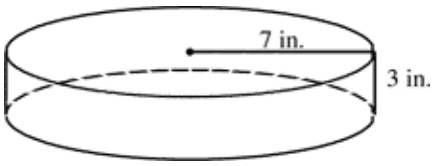


38. Write the formula for the volume of a rectangular prism.

Find the unknown radius, diameter, or height of the cylinder. Use 3.14 for π.

39. $V = 301.44$ ft^3
$r = 8$ ft
$h =$?

40. A concrete stepping stone is formed in the shape of a shallow cylinder as shown below. How much concrete is used to make the stepping stone? Use 3.14 for π.



Evaluate the power.

41. 19^3

Find a solution of the equation using the Guess, Check, and Revise method.

42. $5x = 3x + 24$

43. $3x + 4 = 6x - 14$

44. Jeff earns $4.00 an hour baby-sitting. He is saving to buy a pair of in-line skates that costs $116.00. If Jeff already has $60.00 saved, how many hours must he baby-sit in order to buy the skates?

45. **SHORT RESPONSE Write your answer on a separate piece of paper.**

Five friends are dining together and want to buy 3 salads, 5 sandwiches, 2 bowls of soup, 1 large drink, and 4 medium drinks.

Item	Price
Sandwich	$3.00
Salad	$1.50
Soup	$1.80
Small Drink	$0.65
Medium Drink	$0.75
Large Drink	$0.85

Part A What expression could be used to find the total cost of the items ordered? Explain how to use order of operations to find the total amount of the order and find that total.
Part B If the 5 friends decide to split the bill evenly among them, what expression could be used to find the amount each person pays? Evaluate the expression to find the cost per person if the bill is split evenly. Explain how the order of operations is used to find the answer.

If possible, combine like terms to simplify the expression.

46. $2xy + 2xy + 3y$

Simplify the expression by combining like terms.

47. $7 - 5(4 + x) + 9x$

Tell whether the equation correctly represents the real-life problem. If not, correct the equation.

48. Your aunt is four years older than your mother. Your aunt is 43. How old is your mother?
$y - 4 = 43$

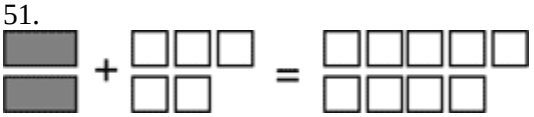
49. At the Last Chance Filling Station, gas costs $2.19 a gallon. Trevor paid $30.66 to fill his tank. Write and solve an equation to find the number of gallons Trevor bought.

Solve the equation. Check your answer.

50. $6x + 7 = 55$

Use variables and symbols to write the equation modeled with the algebra tiles. Solve the equation.

51.



Solve the equation. Check your answer.

52. $8x + 2 = 18$

53. The charge for mailing a first-class letter to Canada using the United States Postal Service is $C = 0.31x + 0.38$ where C is the charge in dollars and x is the weight of the letter in ounces.
a. Find the charge to mail a letter that weighs 6 ounces.
b. How many ounces can be mailed for $2.86?

Simplify. Write the expression using only positive exponents.

54. $\frac{24k^{-6}}{6k^3}$

Find the number the correctly completes the equation.

55. $\frac{m^{-9}}{m^{?}} = \frac{1}{m^{15}}$

Write the number in standard form.

56. 4.59×10^{-7}

57. The average distance from the earth to the sun is about 3.84×10^{8} meters. What is this distance written in standard form using words?

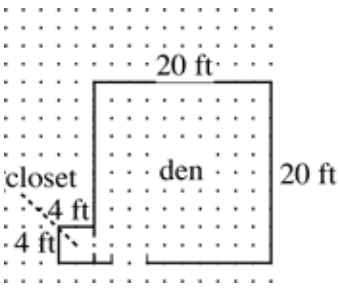
Evaluate the expression when $a = \frac{5}{6}$ and $b = -\frac{9}{8}$.

58. ab

Find the product. Simplify if possible.

59. $6\frac{2}{3} \cdot 5\frac{1}{2}$

60. A homeowner guesses that the cost of carpet for the closet will be about one-fifth the cost of carpet for the den. The carpet sells by the square foot. Do you think the homeowner is correct? Explain.



61. **SHORT RESPONSE Write your answer on a separate piece of paper.**

Brian is an electrical engineer. His monthly income is $4200. Each month, he spends $740 on rent, $355 on his car payment, $185 on food and $250 on utilities. One month he decides, after taking care of these expenses, to deposit $\frac{2}{3}$ of his remaining monthly income in a new savings account.

Part A What expression could be used to find the amount Brian has left after his expenses are paid? Evaluate the expression and explain your answer.
Part B What expression could be used to find the amount Brian will deposit in his new savings account? Evaluate the expression and explain your answer.

Solve the equation.

62. $\frac{5}{12}b = 15$

Solve the equation.

63. $\frac{1}{24}h = \frac{4}{12}$

64. Janelle works $2\frac{1}{2}$ hours each day after school, 3 days a week.

a. Janelle earns $60 per week. How much does she earn per hour?

b. Janelle's employer offers to raise her salary to $125 per week if she will work $2\frac{1}{2}$ hours each day, 5 days a week. What would her new hourly wage be?

c. Janelle offers to work $2\frac{1}{2}$ hours each day, 4 days a week, for $100 per week. How does the hourly wage for Janelle's proposed schedule compare to her employer's offer? *Explain* your answer.

Find the value of the variable that makes the ratios equivalent.

65. $\frac{x}{15} = \frac{16}{12}$

Find the value of each variable.

66. $\frac{2}{9} = \frac{p}{36} = \frac{14}{q}$

67. A youth soccer team eats 8 pounds of oranges per game. Use the proportion to determine how many pounds of oranges the team eats in 6 games.

$\frac{8 \text{ pounds}}{1 \text{ game}} = \frac{?}{6 \text{ games}}$

Use a percent proportion.

68. 38 is 0.02% of what number?

Use a proportion to solve.

69. A population of rabbits is 48% male. If there are 150 rabbits in the population, how many are male?

Order the numbers from least to greatest.

70. $0.78\%, 7.65, \frac{73}{10}, 0.75, \frac{77}{100}$

Write the percent as a decimal and as a fraction.

71. 12%

72. The motels and hotels in a beach-side town are required to add a room-occupancy tax of $6\frac{3}{4}\%$ to every customer's bill. What decimal is used to calculate the tax on each bill?

Find the new amount.

73. 36,540 is increased by 16.8%.

Find the sale price or retail price. Round to the nearest cent.

74. Original price: $12.19
Percent discount: 45%

75. Your dinner bill for Friday night is $36.80. You leave a 15% tip and are charged a 6% sales tax. What was the total cost of the meal?

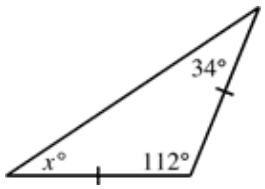
Solve using the percent equation.

76. 24 is 120% of what number?

77. $\angle 3$ and $\angle 4$ are complementary and $m\angle 3 = 48°$. Find $m\angle 4$.

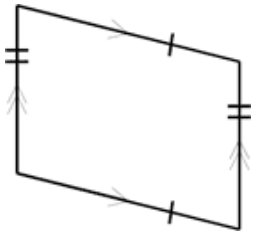
Find the value of *x*. Classify the triangle by its angles.

78.



Write all the possible names for the quadrilateral. Then give the best name.

79.



Find the square root.

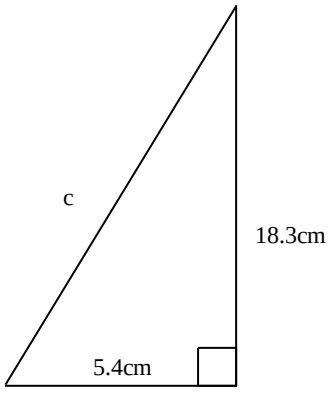
80. $-\sqrt{144}$

Approximate the square root to the nearest whole number.

81. $\sqrt{118}$

Find the unknown length. Round to the nearest tenth, if necessary.

82.



Let *a* and *b* represent the lengths of the legs of a right triangle, and let *c* represent the length of the hypotenuse. Find the unknown length.

83. $a = 42, b = ?, c = 109.2$

84. $a = ?, b = 4, c = \sqrt{17}$

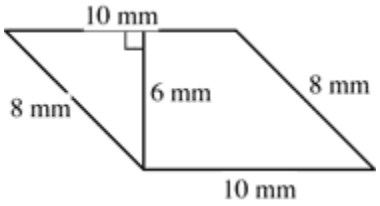
Let *a* and *b* represent the lengths of the legs of a right triangle, and let *c* represent the length of the hypotenuse. Find the unknown length. Then find the area and perimeter.

85. $a = 18.4$ in., $b = ?, c = 39.1$ in.

86. A cable 31 meters long runs from the top of a utility pole to a point on the ground 23 meters from the base of the pole. How tall is the utility pole, to the nearest tenth of a meter?

Find the area of the parallelogram.

87.



Sketch a trapezoid with bases b_1 and b_2 and height *h* and find its area.

88. $b_1 = 11$ ft, $b_2 = 7$ ft, $h = 4$ ft

Find the area of the circle with the given radius or diameter. Use 3.14 for π.

89. $r = 23$ ft

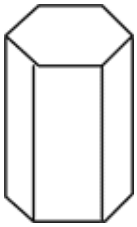
Find the surface area of the prism, where *B* is the area of the base, *P* is the perimeter of the base, and *h* is the height.

90. $B = 18\text{ m}^2, P = 22\text{ m}, h = 1.4\text{ m}$

91. a. Sketch a net for a triangular prism.
b. State the number of faces, edges, and vertices.

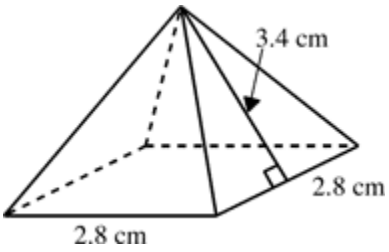
92. Sketch the net for an octagonal pyramid. How many faces, edges, and vertices will the pyramid have?

93. Sketch a net for the solid.



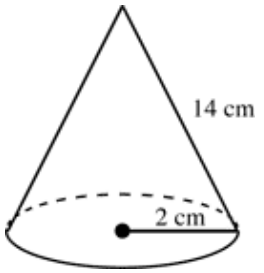
Draw a net of the solid. Then find the surface area. Round to the nearest tenth.

94.



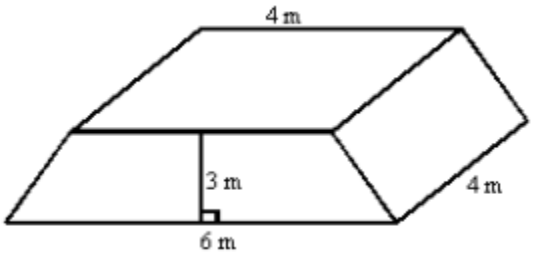
Find the surface area of the solid. Round to the nearest tenth.

95.



Find the volume of the solid. Round to the nearest tenth.

96.



97. Johannas is building a square sandbox with sides 3 feet long. He wants to put sand 1.05 feet deep in the box. How many cubic feet of sand should Johannas order?

98. One section of a brick wall that needs to be built is 12 feet long. The brick wall will be 5 feet tall and 1 foot thick. Each brick is 9 inches long by 6 inches wide by 3 inches thick.
a. What is the total volume of this section of wall?
b. How many bricks will be needed to build this section of wall?

99. The volume of a rectangular box is 52 cubic centimeters. What will the volume be if the length is doubled, the width is halved, and the height remains the same?

Make an input-output table for the function using the domain $-2, -1, 0, 1, \text{and } 2$. Then state the range of the function.

100. $y = 3 + 9x$

Input x	-2	-1	0	1	2
Output y					

Write a function rule that relates x and y.

101.

Input x	1	2	3	4	5
Output y	11	17	23	29	35

102. Miquel received plans for a birdhouse from his friend in Europe. To calculate the amount of material he needed for the birdhouse he had to convert from centimeters to inches. To do this he divided the number of centimeters by 2.54.
a. Write an equation to estimate inches from centimeters.
b. How many inches is 20 centimeters?
c. How many centimeters is 13 inches?

103. Use the pattern in the y-values given in the function table to complete the table.

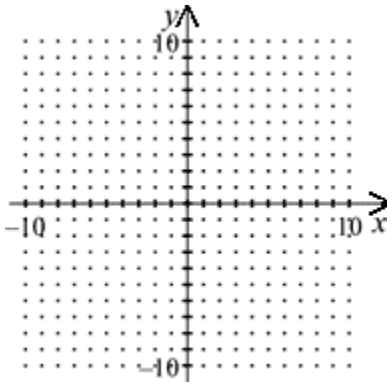
x	1	2	3	4	5	6
y	$\frac{21}{4}$	$\frac{11}{2}$	$\frac{23}{4}$	6		

Complete the table of values for the equation.

104.
$-3x - y = 15$

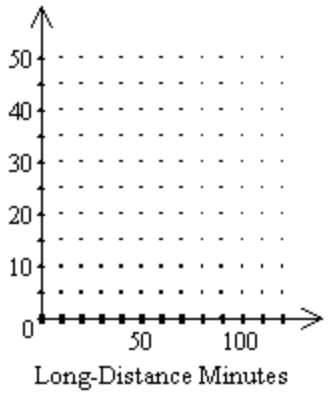
x	-2	-1	0	1	2
y	?	?	?	?	?

105. Make a table of values for the line $y = 2x - 10$ using x-values of 1, 2, 3, 4, and 5. Graph the line.



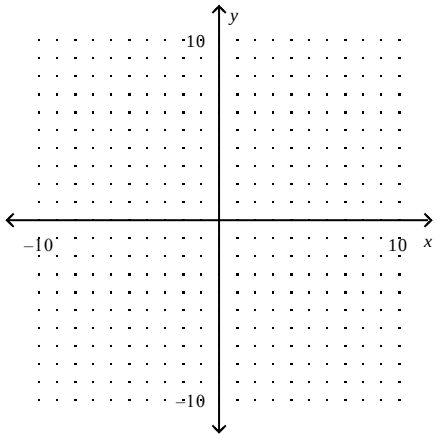
106. Does the equation $2x - \sqrt{y} = 8$ represent a linear function?

107. A monthly residential phone bill, b, in dollars, consists of a \$22 local-service fee plus \$0.10 per minute, m, of long distance calls. The amount of the bill is a function of the number of long distance minutes used, $b = 22 + 0.10m$. Sketch a graph that represents the amount of a monthly bill.



Graph the equation using intercepts.

108. $y = \frac{1}{3}x - 1$



Find the slope of the line passing through the points.

109. $(-6, 8), (6, 3)$

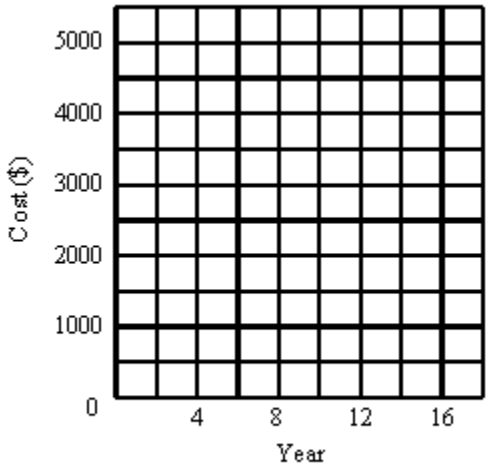
The three points are vertices of a triangle. Find the slope of each side of the triangle.

110. $A(3, 3), B(0, 1), C(-3, 5)$

111. The average cost of a certain computer has decreased since the first year it was marketed. The following table gives the average cost, to the nearest five hundred dollars, in the years since it came on the market.

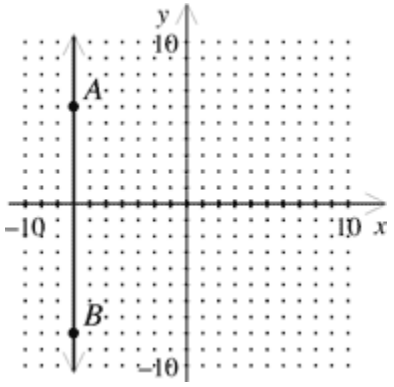
Year	Average Computer Cost ($)
4	3500
8	3000
12	2500
16	2000

a. Plot these points on a graph.
b. Graph a line through the points.
c. Find the slope of the line.



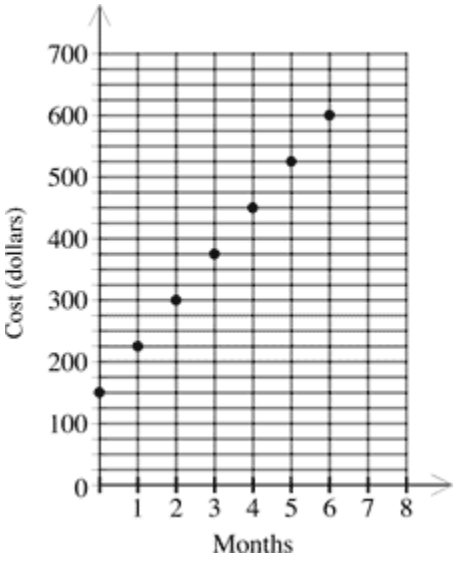
112. a. On a coordinate grid, graph the points (–4, –6) and (–1, 3).
b. Draw a line connecting the points.
c. Find the slope of the line.

113.

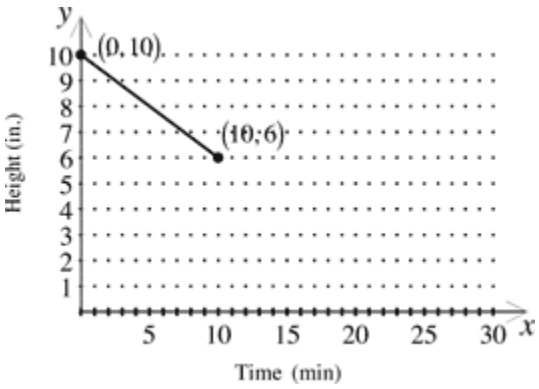


What is the slope of $\overleftrightarrow{AB}$ shown in the graph above?

114. The graph below shows the cumulative cost for a residential broadband Internet connection provided by a local cable company. What is the monthly cost of the service, in dollars?



115. The graph shows a fitted line for the height of a candle after burning for several minutes.

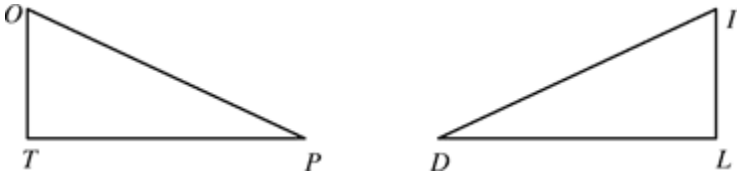


a. Find the slope and *y*-intercept for the fitted line.
b. Write an equation for the fitted line.
c. Estimate the height of the candle after 20 minutes.

Simplify the expression by using the power of a product property or by using the power of a power property.

116. $(-3xy)^4$

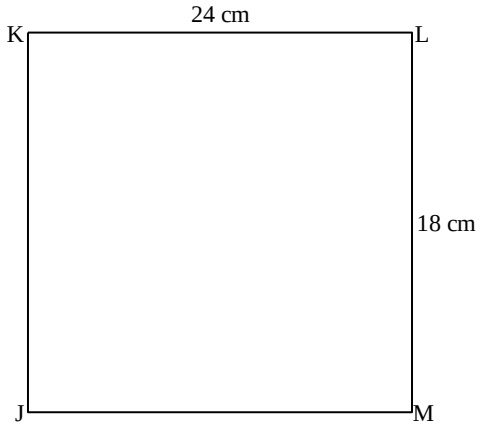
A landscaper designed these two triangular flower beds to be congruent. Use the fact that $\triangle TOP \cong \triangle LID$ to complete the congruence statements.

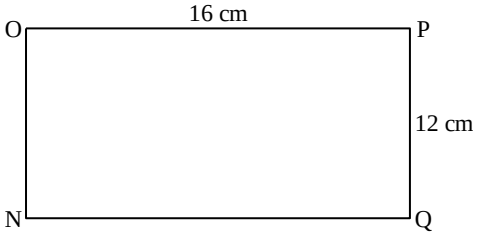


117. $\angle T \cong$ ____ and $\overline{TO} \cong$ ____

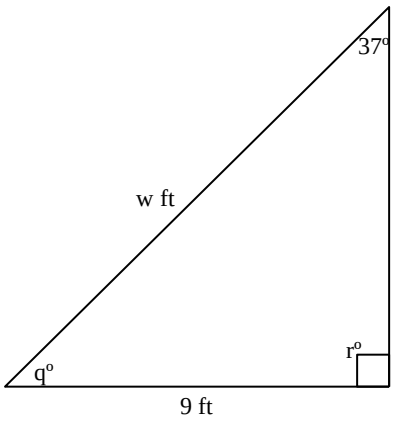
Tell whether the two polygons are similar. If they are similar, find the ratio of the lengths of corresponding sides of the figure on the left to the figure on the right. (Figures not drawn to scale.)

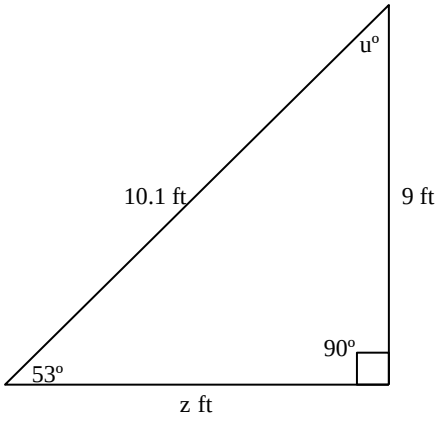
118.





119. The two triangles are congruent. Find the missing side lengths and angle measures.





Simplify the expression.

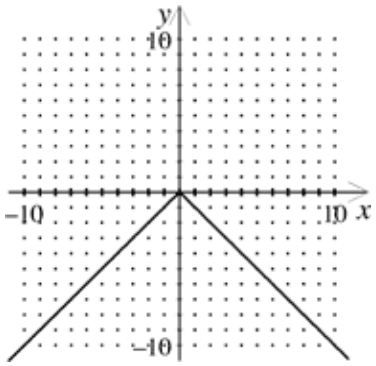
120. $3x(2+4)$

121. A television manufacturer makes models with several different sizes, but they all have the same ratio of screen width to screen height. In one model, the height of the screen is 17.5 inches less than the width of the screen. The perimeter of the screen is 125 inches. Use the definition of perimeter to write an equation that can be solved to find the width of the screen and then write the equation with each side in simplest form. Do not solve the equation.

122. Evaluate the function $f(x) = 2x^2 + 4x - 7$ for $x = -3$.

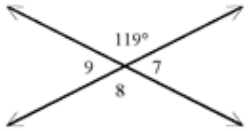
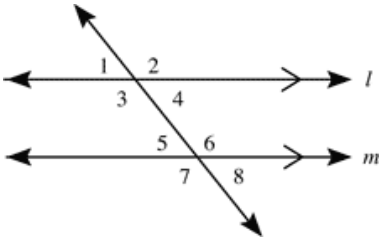
Tell whether the graph represents a function.

123.



Find the measures of the numbered angles.

124.



125. In the diagram, $m\angle 5 = 52°$. Find the measure of each numbered angle.