Name_____

7th Grade Regular Summer Math Packet

Directions: Read the directions carefully.

- This packet will be collected the first day of school.
- You must show work that supports your answer. No work, no credit.
- All answers should be written in simplest form and as mixed numbers if necessary.
- Use 3.14 for pi.
- Round to the nearest hundredth if necessary.
- Sections in the packet indicate if a calculator should be used or not.

Have a great summer!

-Ms. Coakley

Indicate if each number is rational or irrational. (No calculator)

1. $\frac{2}{3}$
2. $-\frac{1}{2}$
3. $\sqrt{2}$
4. π
5. 21.8576982136514756....

Using long division, write each rational number as a decimal. Then, indicate if the number is terminating or repeating. (No calculator)

6. $\frac{2}{3}$

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

Order the set of numbers from least to greatest. (No calculator)

8. -2.5, $\frac{8}{5}$, 6, $\frac{1}{3}$, -12

9. $15,\ 5^2, -1, -\frac{2}{3}, -3, 6\frac{1}{5}$

10. Perform each indicated operation. (No calculator)

$-3+2=$	$-2(5)=$	$96\times 0=$
$\frac{5}{6}+-\frac{1}{12}=$	$-3-(-5)=$	$\frac{2}{3}\cdot 15=$
$-60\div -5=$	$-162-5=$	$-2.5-1.5=$
$125\div -5=$	$\frac{1}{5}+\frac{2}{15}=$	$\frac{2}{13}-\frac{1}{26}=$
$\frac{1}{8}\div 4=$	$-102+102=$	$\frac{2}{3}\left(\frac{4}{5}\right)=$
$-12-5=$	$-3\times -12=$	$\frac{4}{5}-\frac{1}{2}=$
$2\frac{3}{4}\times 5\frac{2}{3}=$	$\frac{\frac{1}{5}}{\frac{2}{3}}=$	$\frac{10}{13}\div\frac{1}{13}=$
$\frac{1}{2}+\frac{1}{6}=$	$-3--18=$	$0\div 15=$
$-6.7-5.7=$	$65\div -5=$	$\frac{14}{15}\cdot\frac{18}{19}=$
$3-(-5)=$	$\frac{5}{6}+\frac{1}{36}=$	$3\div 0=$
$-9--8=$	$-1(15)=$	$-12--6=$
$-5\times 9=$	$\frac{5}{3}-\frac{2}{9}=$	$\frac{4}{5}\div 10=$

Find each unit rate. (No calculator)

11. Katie walks $2\frac{3}{4}$ miles in $5\frac{1}{4}$ hours.

12. Laura reads $\frac{7}{12}$ page in $\frac{1}{5}$ minute.

13. A bathtub fills at a constant rate. The amount of water in the tub increases by $\frac{1}{4}$ gallon every $\frac{1}{2}$ minute.

Tell whether each relationship is proportional. **If so, give the constant of proportionality**. (No calculator)

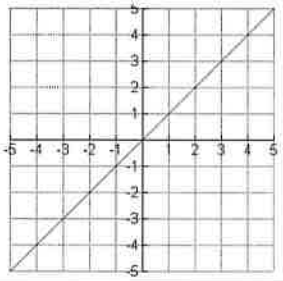
14.

Number of hours	1	2	3	8
Total pages read	12	24	36	96

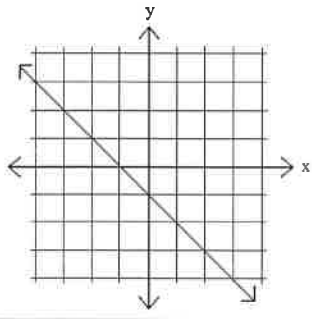
15.

Number of Lawns	1	2	3	4
Amount Earned ($)	15	30	48	64

16. Proportional or non-proportional? How do you know?



17. Proportional or non-proportional? How do you know?



Determine if the following equations represent a proportional relationship. **Then, EXPLAIN YOUR REASONING!**

18. $y = x$

19. $y = 2x - 5$

Convert each percent into a decimal. (No Calculator)

20. 12%

21. 5.2%

22. 103%

23. 6%

24. Andy goes out to a restaurant for lunch. His total bill was $17. He would like to leave a 20% tip. What is the total cost of his meal?

25. Liz goes shopping and finds a dress that she would like to buy. The dress is $52. When she goes to the register, the cashier tells her that there is a special sale and her dress is 15% off. How much will Liz pay for the dress?

Find the selling price of each item.

26. Cost of lava lamp: $35.99
    Discount: 25%

27. Cost of watch.: $87.97
    Markup: 11%

28. Cost of a milkshake: $3.89
    Tax: 3%

Perform the indicated operation. (No Calculator)

29. $(-6x - 8) + (2x + 6)$

30. $(7v - 9) - (6v + 9)$

31. $(-x - 5) - (-2x + 2)$

32. $(-8r - 2) + (4r - 3)$

Factor. (No Calculator)

33. $3a + 15$

34. $10y - 5$

35. $15z + 30$

36. $2x - 8$

37. $12x + 24$

38. $5x - 25$

Use the distributive property to simplify. (No calculator)

39. $3(x - 3)$

40. $-2(5 + 2x)$

41. $4(6x + 8)$

42. $\frac{1}{2}(4x - 8)$

43. $\frac{1}{3}(3x + 15)$

Solve each equation. (No calculator)

44. $x - 20 = 60$

45. $7.5x = 45$

46. $\frac{x}{3} = 12$

47. $x + 30 = -15$

48. $5(2x + 2) = 50$

49. $\frac{x}{2} + 4 = 14$

50. $x - 33 = -25$

51. $-4x + 12 = 128$

52. $16x + 6 = -4x + 56$

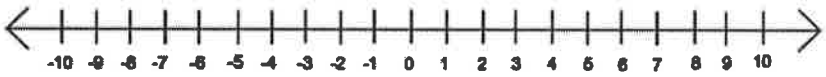
Solve and graph each inequality on the number line. (No calculator)

53. Recall: Both $< and >$ sign use a(n) _____ circle and both $\leq and \geq$ use a(n)_____ circle when graphing on the number line.

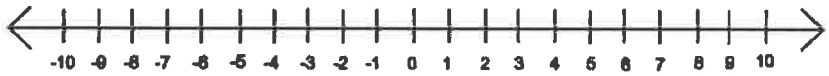
54. When multiplying or dividing both sides of an inequality by a negative number you must _____ the sign.

55. $5x - 3 \geq -23$

56. $20 \leq -2x + 10$



57. $-3x - 12 \geq 15$



58. $\frac{1}{2}x - 16 < 17$

Solve each scale drawings problem.

59. The distance between Ali's house and the mall on a map is 6.4 inches. If the scale of the map is 1 inch: 4.5 miles, what is the actual distance in miles? Hint: Set up and solve a proportion.

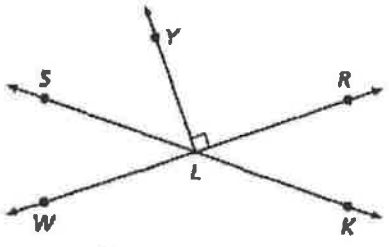
60. The actual distance between two cities is 650 miles. The scale on a map that represents these two cities is 1 inch: 40 miles. How far apart are the two cities on the map? Hint: Set up and solve a proportion.

61. Mary made a scale drawing of the distance between Salt Lake City and Arizona. The distance between Salt Lake City and Arizona on the scale drawing is 21 cm. If the scale is 6 cm: 250 kilometers, what is the actual distance between Salt Lake City and Arizona? Hint: Set up and solve a proportion.

62. On a scale drawing, the area of an amusement park measures 20 square inches. If the drawing uses a scale of 1 inch: 12 feet, what is the actual area of the amusement park? Hint: Set up and solve a proportion.

63. Find the complement **AND** supplement of each angle. (No Calculator)
    a. 12°
    b. 29°
    c. 86°
    d. 2°

Use the figure at the left to answer the following questions.



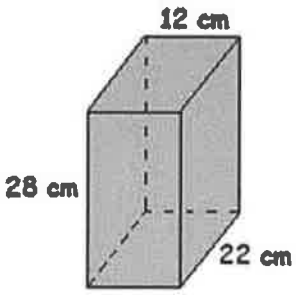
64. What angle is **adjacent** to $< RLK$?

65. What angle is **supplementary** to $< WLS$??

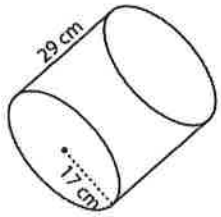
66. The measure of $< RLK$ is $41°$. What is the measure of $< SLY$?

Find the volume and surface area of each figure.

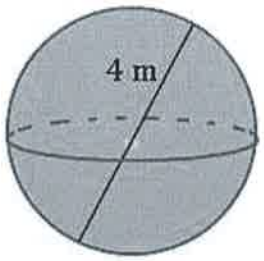
67.



68.



69.



70. The surface area of a rectangular prism is 2,660 square inches. If the length is 44 inches and the width is 2 inches, find its volume.

71. Find the diameter of a cylinder if the height is 12 inches and the volume is 780 cubic inches.

72. What is the area and circumference of a circle if the radius is 5 cm?

The distance around a bicycle wheel is 113.04 in. What is the diameter?

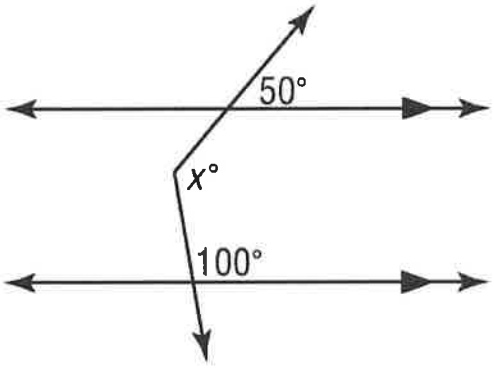
73

The area of a CD is 113.04 cm^2. What is its radius?

74

75.

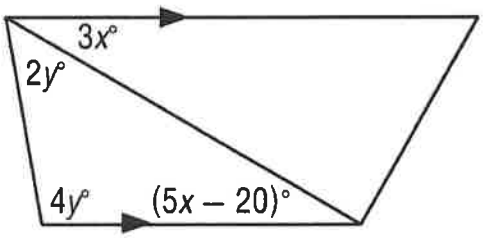
Example(Using a 3rd parallel Line - Auxilury Line)



---

76. **Practice:**

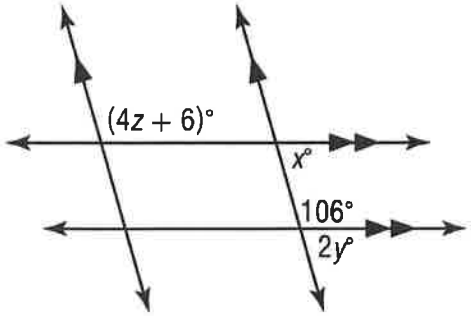
Find the value of the variable(s) in each figure. Explain your reasoning.



---

77. **Practice:**

Find the value of the variable(s) in each figure. Explain your reasoning.



Monique is 14 years older than her friend Tricia. Jackie is 5 years younger than her friend Tricia. The sum of their ages is 147. How old are each of the 3 friends?

78. Construct an 80° angle and draw the angle bisector.

79. Construct triangle ABC with AB = 5 cm, AC = 4.5 cm, and $\angle ABC = 60°$.

80. Construct parallelogram ABCD with AB = 7cm, DA = 4.5cm, and $\angle ABC = 50°$. Then construct the perpendicular bisector of CD and label the intersection point X.

81. Construct quadrilateral WXYZ such that $WX = 4.2$ cm, $XY = 6$ cm, $YZ = 5.2$ cm, $WZ = 5$ cm, and $WY = 8$ cm.

82. Find the number of triangles that can be constructed such that $DE = 7$ cm, $EF = 6$ cm, and $\angle EDF = 50°$.

83. The number of students, n, is inversely proportional to the time, t days, required to complete a project. It takes 12 students 20 days to complete a project.

a. Find the constant of proportionality.

b. Write an inverse proportion equation.

c. Find the number of days it would take for 15 students to complete the same project.

d. Describe the relationship between the number of students and the time required to complete a project.

84. The cost of a piece of ribbon, r, is directly proportional to the length of the ribbon, x. The cost of 17 meters of ribbon is $11.90.

a. Find the cost per meter of the ribbon.

b. Write a direct proportion equation relating r and x.

c. Find the cost of 12 meters of ribbon.

d. Describe the relationship between the length of the ribbon and the cost.

Write an equation for each problem. Solve and show your work.

85. Terry spent a total of $11.73 on 11 apples and a pint of ice cream. If a pint of ice cream costs $3.15, how much did each apple cost?

86. The students collected $2,484 in three months. The amount of money collected in each of the first two months was four times the amount collected in the third month. How much was collected in the third month?

87. The sum of two facing page numbers in a book is 215. What are the two page numbers?

88. Grace saved $34 more than Claire. If they saved $172 altogether, how much did they each save?

89. James is five times as old as Pauline. The difference between their ages is 56. Find both of their ages.

Write an inequality for each problem. Solve and show your work.

90. Sophia has scored 18, 24, and 32 points in her last 3 basketball games. How many points must she score in the next game so that her four-game average is at least 24 points?

91. A school is sending 5 teachers and some students on a field trip. The admission price for teachers is $11.50 and students are $9 each. If the budget for the field trip is $425, at most how many students can go?

92. The fees for 2 printing companies are shown below.
Company (A): flat fee of $12 plus 28 cents per word
Company (B): flat fee of $8 plus 38 cents per word
If a print contains x number of words, for what values of x are Company A's rates cheaper than Company B?