San Domenico Summer Packet

Rising Pre-Algebra (students who have just completed 6th grade math at SD, and **new students entering 7th grade**)

Please show your work to solve the following problems. All work should be completed on a **separate sheet** of paper, or digitally on notability (You must include the question number, and please box your answer). You will be graded on completion and level of understanding shown. Be sure to make your thinking visible!

Expressions and Equations

Simplify. Don't forget what you know about order of operations!

1. $12 \div 6(6 + 1)$

2. $(7 + 9 + 2) \div 6$

3. $6 + 4 - 1 + 2$

4. $6 + 3 + 3 \bullet 5$

5. $[-24 - (-14)] \div 2$

6. $4(-5) - (-12) \div 2$

7. $[-10 - 125 \div 5] \bullet -(1)$

8. $48 \div 8 \bullet 2 + (30 - 16) \bullet 7$

9. Susan and Monica have $186 altogether. Monica and Ruth have $372 altogether. Ruth has 4 times as much as Susan. How much does Susan have?

10. Ann had $198 more than her sister. After their mother gave Ann $20 and her sister $60, Ann had twice as much money as her sister. How much money did Ann have at first?

Solve the equations

11. $\frac{d}{-5} = 12$ 12. $-2p = 1$ 13. $12n = 60$

14. $\frac{3}{4} = w + \frac{1}{2}$

15. $\frac{3}{4}n = 5\frac{1}{4}$

16. Write an equation to represent the following description.

Eighteen less than seven times a number is 17

17. Evaluate $5b - c$ for $b = 7,\ c = 4$

18. What is the value of $4x^2 + y^2$ for $x = 3,\ y = 2$?

19. Evaluate the expression below for $x = 4$ *and* $y = 5$

$$x^2 + 2(x + y)$$

20. Evaluate $2x - y$ for $x = 8$ *and* $y = 3$

21. What is the value of *c* in the given equation?

$$c - 11 = 2$$

22. What is the value of *w* in the given equation?

$$w - 17 = 12$$

23. Solve the equation.

$$\frac{x}{15} = 30$$

24. Solve the equation.

$$3r = 57$$

The Number System

25. Use prime factorization to determine the GCF of 45 and 10.

26. What is the least common multiple of 8 and 12?

27. Find the least common multiple of 4 and 26.

28. Express each product (multiply) as a decimal.

$0.26(1.5)$ $1.04(0.4)$

29. Find the quotient of 96,000 and 3,200

Find the product

30. $3.25 \bullet 4.2$ 31. $\frac{1}{4} \bullet \frac{2}{3}$ 32. $3\frac{1}{4} \bullet 2\frac{2}{3}$

33. Six gallons of juice fit into 5 glass containers. How many gallons of juice are in each container? Express your answer as a mixed number and a decimal.

34. Kendall took $\frac{7}{5}$ of an hour working on her science project. This was three-quarters of an hour more than the time she spent working on her English essay. Find the amount of time she worked on her essay, in minutes.

35. Keith spends one-sixth of his savings on a magazine and $\frac{2}{5}$ of the remainder on a storybook. What fraction of his savings is left?

36. A wire that is $\frac{7}{8}$ of a meter long is cut into 10 equal pieces. How long is each piece?

37. Mr. Addams buys 4 bags of charcoal for a barbecue. Each bag weights $5\frac{1}{2}$ pounds. What is the total weight of the charcoal?

38. Paul made $7\frac{2}{3}$ pints of pineapple juice. He drank $\frac{5}{6}$ pints of the juice, and poured $\frac{3}{4}$ of the remaining juice equally into 3 bottles. How much pineapple juice does each bottle contain?

39. Sam spent half of a sum of money on a book, and $\frac{1}{2}$ of the remainder on a bag of candy. He had $2 left. How much did he pay for the book?

40. A chef buys 5.46 pounds of ground turkey to make some casseroles. Each casserole requires 0.13 pound of turkey. How many casseroles can the chef make?

41. Adeline and Maya are buying lemons and sugar for a lemonade stand. Adeline spends $14.78 to buy lemons and Maya spends $8.79 to buy sugar. How much does it cost in total to make the lemonade?

42. Find the product of $\frac{3}{8} \text{x } 7$

43. Multiply. **Write the product in simplest form**.

$$\frac{5}{7} \times \frac{4}{9}$$

44. Find the product. **Write your answer in simplest form**.

$$\frac{1}{4} \text{ x } 4\frac{1}{3}$$

45. Divide. Simplify your answer.

$$\frac{10}{33} \div 1\frac{2}{11}$$

46. Multiply. Write the product in simplest form.

$$\frac{5}{7} \bullet \frac{6}{9}$$

47. Henry is on a 5.6 mile run and has already run 1.98 miles. How many more miles does Henry need to run?

48. Find the product 2.2×0.03

49. Find the quotient $37.5 \div 1.5$

50. Compare -8 and -3 using an inequality.

51. Order the numbers from **greatest to least**.

$$-1, -6, 2.6, -1.8, -1\frac{4}{5}, -|-3|$$

52. If Jillian decreases her bike speed by 6.6 miles per hour, her speed will be 15.3 miles per hour. What is Jillian's speed now?

53. Use the inequality symbols > and < to compare $|-3|$ and $|-2.9|$

54. Brian merges onto the highway at 8 A.M. and drives 165 miles. He takes a 1-hour break and then drives 220 miles. For both drives, the cruise control is set on 55 miles per hour. How long does the trip take?

55. A farmer harvests 25 bushels of McIntosh apples each day and 18 bushels of Granny Smith apples each day. In how many days will he have more than 100 bushels to sell?

56. Solve the inequality. Graph your solution on a number line.

$x - 15 > 3$

57. Solve the inequality below. Graph your solution on a number line.

$2x < 12$

Ratios, Percents, and Proportional Relationships

58. Express each decimal as a percent

0.02 1.2 .25 .12

59. Fill in the blanks to make the ratio statement true.

4:9 = 36: _____

48:64 = _____:8

60. Express each ratio in simplest form.

13:39 16:40 25:15

61. The ratio of the number of boys to the number of girls at a town fair is 5: 8. There are 60 boys at the fair. If the admission fee for each child is $5.50, find the total admission fees for the boys and girls.

62. Ali and Shannon share 240 rubber bands in the ratio 5:3. How many fewer rubber bands did Shannon receive than Ali?

63. Amin, Barb, and Curt collected seashells in the ratio of 10:12:7. Curt collected 98 seashells. How many seashells did they collect together?

64. The ratio of the number of adults to the number of children at the music show is 3:7. There are 152 more children than adults. Find the number of adults at the show.

65. The ratio of the number of red beards to the number of green beads to the number of blue beads is 2:3:7. There are 150 more blue beads than red beads. How many beads are there in all?

66. Find two equivalent ratios for 40:25.

67. Are $\frac{14}{63}$ and $\frac{40}{60}$ equivalent? **How do you know?**

68. The ratio 20:8 shows the ratio of games won to total games played for the middle school basketball team. Express this ratio as a fraction **and** a decimal.

69. In the student council elections, the ratio of students who voted for the winner to all the students who voted was 0.65. There were 300 students who voted. How many students voted for the winner?

70. Maggie scored 24 goals at soccer practice. Her ratio of goals to misses was 6:3. How many times did she miss?

71. You want to buy some rice. A 9-ounce package costs $4.68. A 26-ounce package costs $10.40. Which package is the best buy? Show your work to prove your answer.

73. What is 70% of 40?

74. 66 is 44% of what number?

75. Mr. Whaley gave half of his pizza to Ms. Bukata and a quarter to Mr. Hopper. What percent of the pizza was left?

76. Tessa earns $1,800 a month. She spends 30% of it on rent and saves the rest. How much does she save each month? You must show your work for full credit.

77. Of the 2,500 apartments in a new development, 10% have one bedroom, 25% have two bedrooms, and the rest have three bedrooms. How many three-bedroom apartments are there?

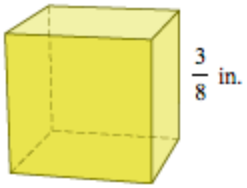
78. An airplane is traveling 520 miles per hour. How many hours will it take the airplane to travel 18,200 miles?

Geometry

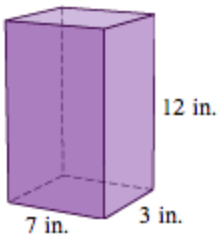
79. Find the volume of a cube with side length of 2 cm.

80. Find the volume of a cube with side length $\frac{2}{8}$in.

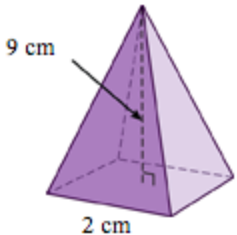
81. Find the surface area of the cube.



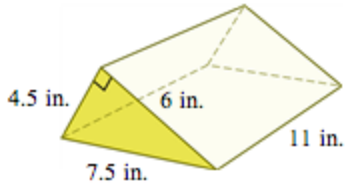
82. Find the surface area of the rectangular prism.



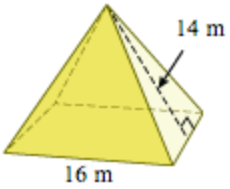
83. Find the volume of the square pyramid.



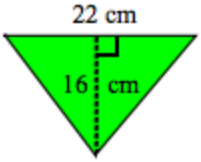
84. Find the surface area of the triangular prism.



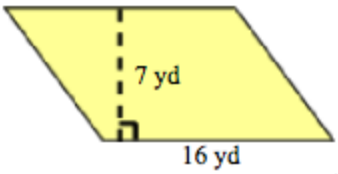
85. Find the surface area of the square pyramid.



86. Find the area of the triangle.

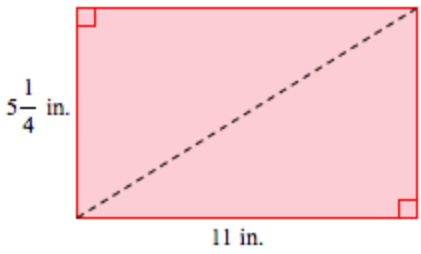


87. Find the area of the parallelogram.

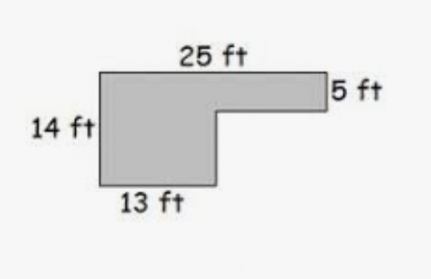


88. A rectangular playing field is 60 yards long. Its area is 2,940 square yards. Find the <u>width</u> of the field.

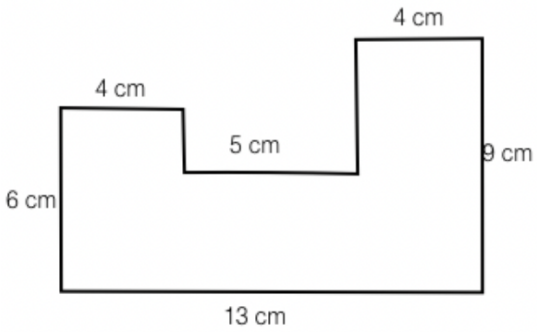
89. A rectangle has dimensions $5\frac{1}{4}$ in. by 11 in. A diagonal of the rectangle forms two matching right triangles. What is the area of <u>one</u> of the triangles?



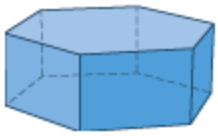
90. Find the area of the polygon below.



91. Find the area of the polygon below.



92. Name the figure shown.



- ○ Rectangular prism
- ○ Rectangular pyramid
- ○ Hexagon
- ○ Hexagonal pyramid
- ○ Hexagonal prism
- ○ Rectangle

93. The perimeter of a rectangular poster is $3\frac{1}{12}$ feet. Given that the width of the poster is $\frac{2}{3}$ foot, find the area of the poster.

Statistics-Measures of Center and Variation

Mean	**Median**
The **mean** is the average or norm.	The **median** is the middle value.

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- Add up all of the values to find the total.
- Divide the total by the number of values you added together.

2+2+3+5+5+7+8 = 32 32 ÷7 = **4.57**

There are 7 values Divide total by 7 This is the **mean**!

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- Put all of the values into order.
- The median is the middle value.
- If there are two values in the middle, find the **mean** of these two.

2,2,3,5,5,7,8 5 is the **median!**

Numbers in order

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Mode

The **mode** is the most frequent value.

- Count how many of each value appears.
- The mode is the value that appears the most.
- You can have more than one mode.

2,**2**,3,**5**,**5**,7,8 **2 and 5** The **modes** are 2 and 5

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Range

The **range** is the difference between the lowest and highest value.

- Find the highest and lowest values.
- Subtract the lowest value from the highest value.

2,2,3,5,5,7,**8** 8-2=**6**

Lowest → highest This is the **range!**

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94. For the questions below, **you may use a calculator** for your addition and division if needed.

95. Calculate the mean of the data set below.

9.8 7.2 6.3 8.7 5.8 9.4 5.1 6.2

96. Michelle asks ten of her classmates for the number of hours they usually sleep when there is school the next day. They responded (in hours): Calculate the mean number of hours that Michelle's classmates sleep on a school night.

8 10 8 8 11 11 9 8 10 7

97. Using the data below, calculate the range of the data set.

42.1, 46.4, 58.2, 67.3, 49.1, 40.2, 22.3, 46.6

98.Seven people were asked how many minutes they lived from work. The responses were 15, 7, 14, 21, 5, 9 and 13. Calculate the **mean**, **median**, **mode** and **range** for the set of data.

99. Calculate the mean, median, mode and range of the data set below.

13, 18, 13, 14, 13, 16, 14, 21, 13

Challenge Questions! ***Optional***.

1. The ratio of the number of red beads to the number of green beads to the number of blue beads is 2: 3: 7.There are 150 more blue beads than red beads. How many beads are there in all?

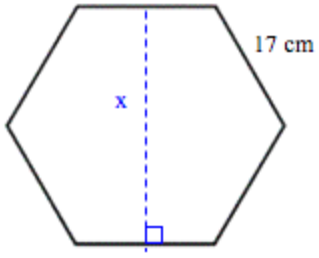
2. If you start with an integer, and subtract − 85, add − 57, subtract 68, add − 77, add 55, and subtract − 73, the result is 0. Find the integer that you start with.

3. A sixth grader received scores of 88, 73, 81, 83, 79, 94 on his tests. The seventh test was coming up and the student would like to know what he needed to score to have a mean of 83. Calculate the **MISSING TEST SCORE**. Next, using this seventh score, what is the **median** and **mode**? Let x= the 7th test score.

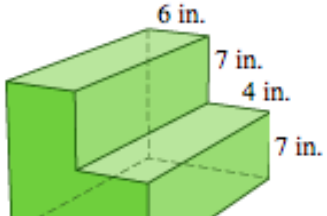
4. Six data points are collected. The mean is 112. Five of the data points are given below. What is the missing data point? (use example above). Let x= the missing data point

100, 121, 105, 113, 108, x

5. The area of a regular hexagon is 750.84 centimeters squared. What is the height, x, of the hexagon? Round to the nearest hundredth. You should use a calculator.



6. Find the surface area of the figure given.



7. A group of friends went out for lunch. Two people ordered soup. Two people ordered sandwiches. Each sandwich cost twice as much as a bowl of soup. Two people ordered burgers. Each burger cost three times as much as a bowl of soup. The total cost for their lunch was less than $24.48. What was the price of a bowl of soup?