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.

1. You bought 4 boxes of facial tissues for $3.79. Which is a better buy than the one you made?
   a. 6 for $5.75
   b. 2 for $1.96
   c. 3 for $2.79
   d. 1 for $.97

2. Determine a ratio that forms a proportion with $\frac{2}{5}$

3. Find the unit rate of 18 mi in 12 h

4. What ratio is *not* equivalent to 8 : 12?
   a. 2 : 3
   b. 16 : 24
   c. 10 : 14
   d. 4 : 6

5. You use 2 bags of peat moss and 5 bags of topsoil to fill your garden bed. What is the ratio of topsoil to peat moss?

6. You decide to use a scale of 1 in. : 6 ft to make a scale drawing of your dining room. If the actual length of the dining room is 15 feet, what should the length of the dining room in your scale drawing be?

7. What is the value of $\frac{a-2b+3}{5}$ when $a = 3$ and $b = -4$?

8. Jerod has 5 quarters, 2 dimes, 1 nickel, and 4 pennies in his pocket. If he reaches into his pocket and pulls out one coin, what is the probability that the coin will be worth more than a dime?

9. Cal rolls one six-sided number cube numbered 1 to 6 while playing a board game.

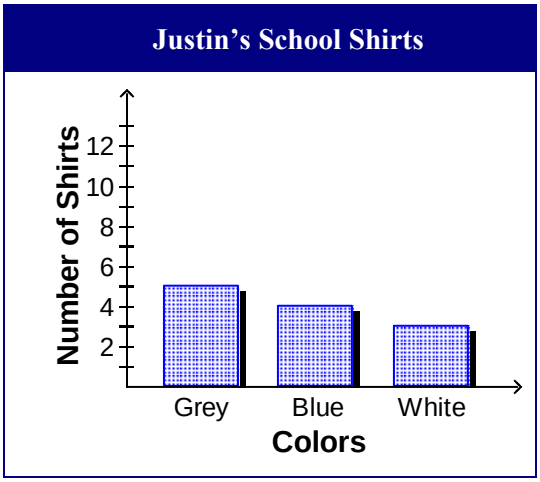
   

   What is the probability that he will roll a number greater than 2?

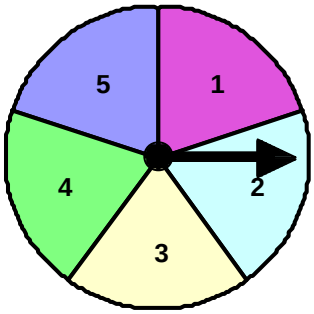
10. The high school basketball team runs 2 running drills, 3 dribbling drills, and 1 shooting drill during each practice. What is the probability that the coach will start with a shooting drill at the next practice?

11. Justin's school requires uniforms. The students can choose from 5 different shirt colors. Justin owns 5 grey, 4 blue, and 3 white. What is the probability that he will wear grey on Monday?



12. Glen spins the spinner below.



How likely is it that he will spin a number 1?

13. An airliner's average speed is about 475 miles per hour. It takes about 1.6 hours of flight time to travel from New York City to Atlanta, Georgia. You can use the equal tick marks shown below to help in measuring off distances on the map.

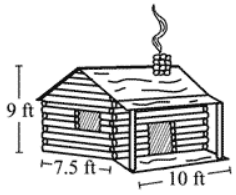
Which is the best estimate for the flight time for a direct flight from New York City to Los Angeles?

Complete each statement.

14. $(-5+1)+-4=-5+\left[1+(-4)\right]$ is an example of the _____ property.

15. $-3.4 \cdot 9 = 9 \cdot -3.4$ is an example of the _____ property.

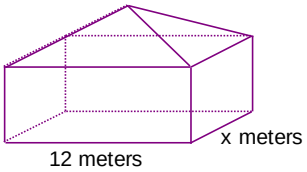
16. Jorge is building a scale model of the small log cabin shown below. The model will be 1.8 feet high.



What is the scale of the model written as a fraction?

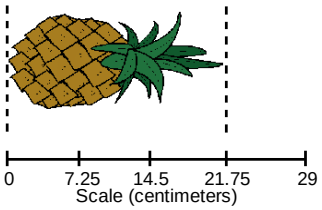
17. A small company gives bonuses to its employees in December if the year has been profitable. Each employee receives $80 plus $13 for each month of employment with the company:
$bonus = 80 + 13n$, in dollars, where n represents the number of months an employee has been with the company. In a profitable year, what is the amount of the bonus, in dollars, for an employee who has been with the company 40 months?

18. An architect is designing a rectangular cabin with a perimeter of 38 meters. The formula for the perimeter of a rectangle is $P = (2 \times length) + (2 \times width)$.



If the length is 12 meters, what is the width in meters?

19. According to the scale in the drawing, what is the length of the pineapple? Express your answer in centimeters.



20. A computer program that originally sold for $55.99 has been put on clearance and reduced by 20%. If Lisa buys the program, how much will she pay after a sales tax of 5.5% is applied? Round your answer to the nearest cent.

A botanist is experimenting with different plant foods to find an optimal growth formula. The stem-and-leaf plot shows the heights, in centimeters, of twelve rose bushes after being treated with different mixtures of plant food.

Height (centimeters)	
Stem	**Leaf**
5	1, 7, 8, 8
6	0, 2, 2, 4, 8, 9
7	1, 3, 8
	5 | 8 = 58 cm

21. In the above stem-and-leaf plot, what is the height, in centimeters, of the shortest rose bush measured?

Find the average speed.

22. 212 miles in 4 hours

Write the verbal sentence as an equation. Let *y* represent the number.

23. The sum of $\frac{1}{4}$ of a number and 120 is 315.

Find the unit rate.

24. $5.60 for 7 item

Write and then solve the proportion.

25. 8 is to 12 as *p* is to 18.

Use a proportion to answer the question.

26. What percent of 250 is 20?

Evaluate the expression for the given value(s) of the variable(s).

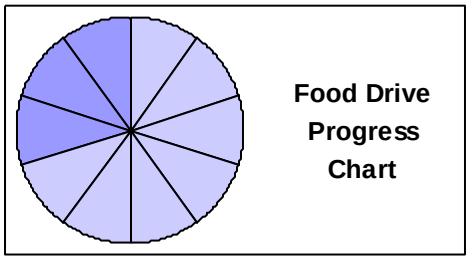
27. $\frac{m+n}{n-2}, m = 16, n = 8$

28. Write an expression using b to represent the cost of a book and p to represent the cost of a pencil that represents the following phrase:
"the sum of the costs of 7 books of equal value and 8 pencils of equal value."

Use the distributive property to write an equivalent expression.

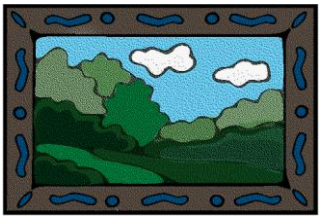
29. $5(9x - 5y)$

30. Paige is making a poster in art class to show how much canned food her school has collected for their food drive. Paige divides a circle into 10 equal sections and paints 3 sections dark blue. This shows that they have already collected $\frac{3}{10}$ of their goal.



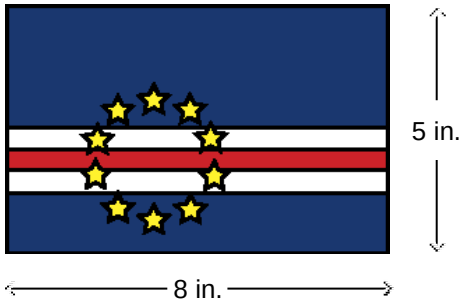
What percent is equivalent to the fraction of canned goods the students have collected?

31. The value of a rare painting has increased 160% over the past 60 years. Express the percent increase in value as a fraction in reduced form.



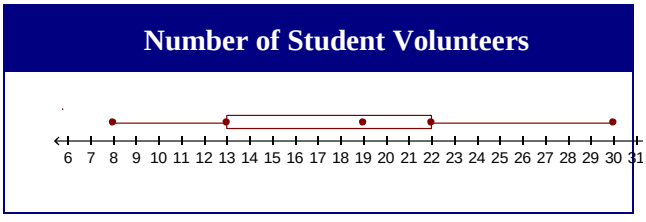
32. There are 10 park rangers at the Lakeview Park, and 7 of them have been certified in wilderness survival training. What percent of the park's rangers have received their certification?

33. Elizabeth is sketching a copy of the flag shown. The dimensions of the drawing are one-third those of the actual flag. If the area of the drawing is 40 square inches, what is the actual area of the flag?



34. There were two candidates in a student government election for 7th grade Treasurer, Kaya and Jay. Out of 322 total votes, Jay received 112 votes and Kaya received 210. What percentage of the students voted for Kaya? Round to the nearest tenth, if necessary.

The box and whisker plot shows the number of seventh graders who volunteered each week at a summer camp this year.



35. Refer to the information above. What was the median number of seventh grade volunteers each week?

36. The table below shows the number of miles that a cross country team ran each day last week. What is the mean number of miles? Round your answer to the nearest tenth, if necessary.

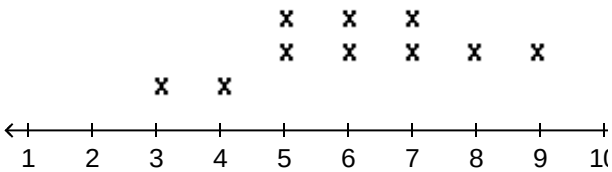
Cross Country Training Routine	
Day	**Miles**
Mon	6
Tues	8
Wed	7
Thurs	6
Fri	8
Sat	7
Sun	8

37. The population of the United States is about 300,000,000. About 21% of the population is 14 years old or younger. Suppose there are 50 people sitting in a movie theater and 14 of them are 14 years old or younger. What is the theoretical probability that someone in the U.S. is age 14 or younger? What is the experimental probability that someone in the theater is age 14 or younger? Express your answers as decimals.

38. A bag contains 950 marbles. Some are red and some are blue. A student reached into the bag and pulled out a random sample of 20 marbles. He recorded that 11 were blue and 9 were red. If this is a representative sample, about how many marbles out of 950 are blue?

39. A group of friends keeps track of how many drawings they make.

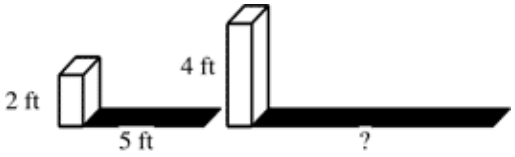
What is the range of the data?



Number of Drawings

40. The daily low temperature for ten consecutive days were 26°, 24°, 24°, 25°, 29°, 49°, 52°, 54°, 59°, 23°. Which measure of central tendency best describes the average low temperature for the 10 days? Use this measure to find the average low temperature.

41. The smaller box is 2 feet tall and casts a shadow 5 feet long. The larger box is 4 feet tall. (Figures may not be drawn to scale.)



How long is the shadow that the larger box casts?

42. Janelle went to the mall to buy a shirt for a friend. Her choices for the shirt are striped and plaid. Both of the choices come in purple, red, and orange. Draw a tree diagram that represents her choices.

43. A map has a scale of 1 cm : 9 km. If two cities are 2 centimeters apart on the map, what is the actual distance between the cities?

44. Write an expression using b to represent the cost of a book and p to represent the cost of a pencil that represents the following phrase:
"the sum of the costs of 7 books of equal value and 8 pencils of equal value."

45. State the property that is illustrated.
$3 \cdot (5 \cdot 7) = (3 \cdot 5) \cdot 7$

Identify the property shown.

46. $5 \cdot 1 = 5$

Identify the property illustrated.

47. $56 \cdot (-5) = (-5) \cdot 56$

48. $\left(\frac{x+8}{y-3}\right) \cdot 0 = 0$

49. $-1 \cdot (-87) = 87$

Solve the equation. Check your solution.

50. $-8y + 5 + 2y = -37$

51. $\frac{3}{4}p - 2 = \frac{3}{8}$

Use the cross products property to solve the proportion.

52. $\frac{6.3}{9} = \frac{t}{15.8}$

Write the verbal phrase or sentence as a variable expression or equation. Let *n* represent the number.

53. 6 times the sum of a number and 5

54. A class is using a scale of 1: 20 to build a model of their town. How many inches tall should the class make the scale model of the city hall building if the actual building is 30 feet tall?

55. Lena wants to buy a computer that costs $900 dollars. She already has $473 dollars saved. Her grandmother will pay her $7 an hour to help her with the yard work. How many hours will Lena need to work before she can afford to buy the computer?

56. Lewis Wilson works at a nursery. Last fall, he kept track of flower bulb sales and discovered that 21 out of 50 bulbs sold were crocus bulbs. What percent of the bulbs were crocus bulbs.

Write a proportion and solve.

57. The cost of 50 shares of Fly-by-Night Airlines is $72.50. How many shares can you buy for $725.00?

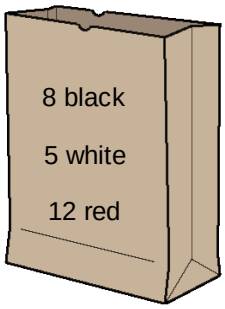
58. On Mr. Bach's farm, 18 of the 30 horses are mares. What is the ratio of mares to all horses written as a fraction and a decimal? Is there another way to write the ratio? Explain your answer.

59. A company wants to hire the person who types the most words per minute. Liz types 648 words in 9 minutes. Brad types 816 words in 12 minutes.
    a. Write Liz's typing rate as a unit rate.
    b. Write Brad's typing rate as a unit rate.
    c. Brad claims that since he typed more words, he will be hired. Is Brad correct? *Explain* your reasoning.

60. It takes 30 minutes of walking to burn the calories gained from eating 3 cookies.
    a. Write and solve a proportion to find how many minutes it takes to burn the calories gained from eating 1 cookie.
    b. After you eat some cookies, it takes a two hour walk to burn the calories gained. How many cookies did you eat? *Explain* your answer.

61. An artist is creating a statue from a scale model. The scale model has a height of 8 inches. When the statue is finished, it will have a height of 24 feet.
    a. What is the scale comparing the scale model to the statute?
    b. The length of a foot in the scale model is 0.9 inches. How long will the finger of the statue be when it is completed?

62. A bag contains 25 ping-pong balls colored black, white, and red. Federico reaches in and chooses one ball without looking.



Complete the following sentence using the words: *black*, *white*, and *red*. Use each word once.

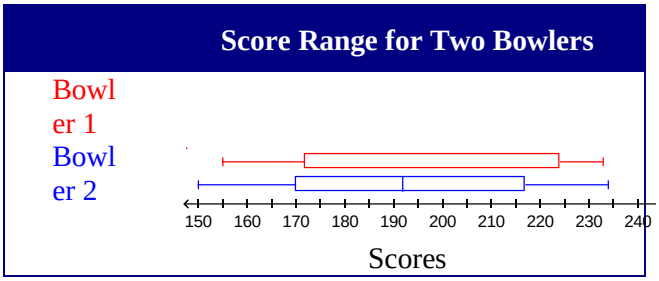
Federico is **less** likely to pick ____ than ____, but he is **least** likely to pick ____.

63. The table below shows all of the possible outcomes when two number cubes are rolled. Marita wants to know how likely it is to roll a sum of 10 or greater. So far she has rolled two number cubes 40 times. The sum of the number cubes has been 10 or greater on 5 of those rolls.

	Possible Outcomes					
	1	**2**	**3**	**4**	**5**	**6**
1	(1, 1)	(1, 2)	(1, 3)	(1, 4)	(1, 5)	(1, 6)
2	(2, 1)	(2, 2)	(2, 3)	(2, 4)	(2, 5)	(2, 6)
3	(3, 1)	(3, 2)	(3, 3)	(3, 4)	(3, 5)	(3, 6)
4	(4, 1)	(4, 2)	(4, 3)	(4, 4)	(4, 5)	(4, 6)
5	(5, 1)	(5, 2)	(5, 3)	(5, 4)	(5, 5)	(5, 6)
6	(6, 1)	(6, 2)	(6, 3)	(6, 4)	(6, 5)	(6, 6)

Part A
What is the theoretical probability of rolling a sum of at least 10 with two number cubes?
Part B
What is Marita's experimental probability of rolling a sum of 10 or greater? Is it the same as the theoretical probability? Why or why not?

64. Two bowlers made a box-and-whisker plot of their scores for the season. Here is a comparison of their range of scores.



Part A Which bowler has a higher median score?

Part B Which bowler has a higher minimum score?

Part C Which bowler has a higher maximum score?

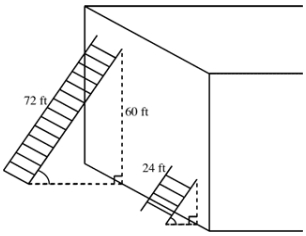
Part D Which bowler has a wider range of scores?

Part E Which bowler do you think is the better bowler? Why?

65. Laurie is a 0.268 hitter on her softball team, which means that she is expected to get a hit about 26.8% of the times she has an at bat. In today's game, she had 5 at bats and got 3 hits. How does Laurie's batting performance in today's game compare with her expected performance? Explain.

66. Leslie recorded the weights of the first ten fish he caught and released at Hagg Lake this season. The weights were 6 pounds, 4 pounds, 7 pounds, 3 pounds, 5 pounds, 2 pounds, 4 pounds, 3 pounds, 20 pounds, and 3 pounds.
Part A Find the mean, median, and mode.
Part B Explain why mean and mode are inappropriate to describe the data.

67. Two ladders are leaning against a wall at the same angle as shown.



How far up the wall does the shorter ladder reach? (The figure may not be drawn to scale.)

68. Anna is having lunch at a sandwich shop. Her options for fillings are: spicy tofu, egg salad, ham, or turkey. Her choices for condiments are: mustard, mayonnaise, or salad dressing. She could choose one of the following breads: whole wheat or rye. Draw a tree diagram to show how many different sandwich choices she has, assuming she chooses one filling, one condiment, and one type of bread.

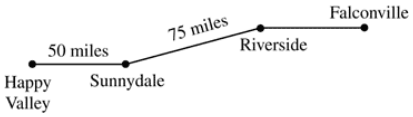
69. Shannon is using a map to find the distance between Cottage Grove and Mill City. The cities are 2.7 inches apart on the map. Using the scale, Shannon determines that it is 10.8 miles from Cottage Grove to Mill city. What is the map scale? Explain your answer.

70. An online music club charges a membership fee of $15 plus an additional $2 per song downloaded.
a. Write an expression to represent the total cost for the membership fee and *n* songs. How much will you spend for 6 songs?
b. Will you spend twice as much for 12 songs? Explain your answer.

71. Luisa routinely marks up flowers to 130% of the cost to find the selling price. Last week, Luisa purchased a dozen roses at a cost of $11.50. The roses were not selling well, so she reduced the selling price to 65% of the marked-up price. To the nearest cent, what was the new selling price?

72. School A has 480 students and 16 classrooms. School B has 192 students and 12 classrooms.
a. What is the ratio of students to classrooms at School A?
b. What is the ratio of students to classrooms at School B?
c. How many students would have to transfer from School A to School B for the ratios of students to classrooms at both schools to be the same? *Explain* your reasoning.

73. On Monday Joy traveled from Happy Valley to Falconville to visit her uncle Bernie.



Part A Joy left Happy valley at 1:00 P.M. and arrived at Sunnydale at 2:15 P.M. What was the her average speed for this leg of the journey? Explain your answer.
Part B If Joy increased her average speed by 10 miles an hour, how long did she take to travel from Sunnydale to Riverside? Explain.
Part C Joy arrived in Falconville at 4:30 P.M. If she averaged 52 miles per hour for the entire trip, how far is Falconville from Riverside? Explain.

74. A school library has 3280 books. Seventy-five percent of the books are non-fiction.

a. What percent of the books are fiction? Write and solve a proportion to find the number of fiction books in the library.
b. There are 123 science fiction books in the library. Write and solve a proportion to find the percentage of fiction books that are science fiction.
c. After the library discards 280 old books, 24 percent of the remaining books are fiction. How many fiction books did the library discard? How many fiction books remain? *Explain* how you found your answer.

75. A snack company is having a contest. Each bag of snacks contains one of the letters S, N, A, C, K. For every 25 bags, there are five S's, six N's, five A's, three C's, and six K's.

Part A What is the probability that a bag of snacks will have an A? Write your answer as a simplified fraction.
Part B What are the odds in favor of a bag of snacks NOT having an A? Explain