2024

Summer Math Packet

Entering

Grade 8

This packet encompasses the skills you learned in 7th grade and will help ensure you are prepared to enter 8th grade in September. Make sure to read the directions for each question carefully. You **MUST** show all your work for your effort grade. If you do your work on another sheet of paper, make sure to attach that to the end of the packet when you hand it to your teacher in September.

You will receive ***two grades*** for the math packet for the new school year so make sure to do your best! One grade is based on effort and the other is accuracy. Effort is showing your work and it is completed. Accuracy is the amount correct.

Due Date: Monday, September 9th, 2024

Good luck and have a wonderful summer!

The Math Department

Name _____

Grade 7
Progress Monitoring
Assessment Form C

1. In the afternoon, the temperature was 52 °F. A strong arctic cold front caused the temperature to drop 38 degrees in $4\frac{3}{4}$ hours. If the temperature continues to drop at the same rate, what will the temperature be after 2 hours?

2. Jonah walks $\frac{1}{3}$ mile in $\frac{3}{4}$ hour. How fast, in miles per hour, does he walk?

A. $\frac{1}{4}$ mile per hour

B. $\frac{4}{9}$ mile per hour

C. $2\frac{1}{4}$ miles per hour

D. $2\frac{4}{9}$ miles per hour

3. Alaina surveys 75 of her classmates and finds that 48% of them like to eat fish tacos. She also finds that 60% of her 45 relatives like fish tacos. How many more of her classmates like fish tacos as compared to her relatives?

A. 9 **C.** 30

B. 12 **D.** 36

4. Jed is pouring water into a container at a constant rate of 8.25 ounces per second. There are already 24.75 ounces of water in a container. How many ounces of water will be in the container after 5 seconds?

A. 29.75 ounces **C.** 49.5 ounces

B. 33 ounces **D.** 66 ounces

5. A game has a spinner with 4 equal-sized sections. The results of 540 spins are shown in the table.

Color	Frequency
Red	145
Blue	111
Yellow	178
Orange	106

Part A

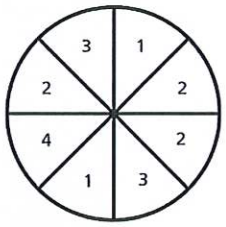
For which color is the experimental probability closest to the theoretical probability? Explain.

Part B

For which color is the difference between the theoretical probability and experimental probability greatest? Explain.

6. Taye bought two T-shirts for $26 and some pairs of socks for $5.95 per pair. His total purchase came to $49.80. How many pairs of socks did he buy?

7. A player spins the pointer of a spinner with eight equal-sized sections.



What is the probability that the pointer will land on an even numbered section?

8. Fergus has $3\frac{1}{4}$ cups of oats. She uses $2\frac{2}{3}$ cups of oats to make oatmeal bars, then borrows 1 cup of oats from her neighbor. She wants to make blueberry oat muffins. The recipe calls for $1\frac{3}{4}$ cups of oats. Does she have enough? How much will she have left over, or how much more will she need?

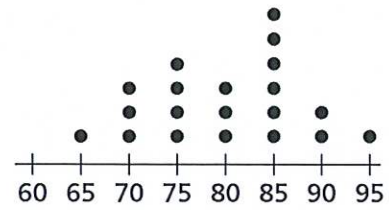
A. Yes, she has $\frac{3}{4}$ cup left.

B. No, she needs $\frac{3}{4}$ cup more.

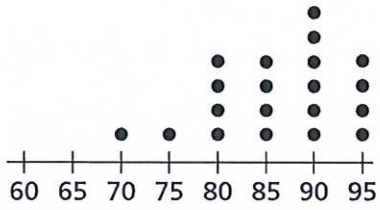
C. Yes, she has $\frac{1}{6}$ cup left.

D. No, she needs $\frac{1}{6}$ cup more.

9. The dot plots describe quiz scores.



Third-Period Class



Fourth-Period Class

Part A

Which is a valid inference based on the means of the data sets.

A. On average, the students in the fourth-period class scored lower as compared to students in the third-period class.

B. On average, the students in the fourth-period class scored the same as students in the third-period class.

C. On average, the students in the fourth-period class scored higher as compared to students in the third-period class.

Part B

Select the statement that best describes the variability of the data sets.

A. The MAD for the fourth-period class is about $\frac{1}{2}$ the MAD for the third-period class.

B. The MAD for the fourth-period class is greater than the MAD for the third-period class.

C. The MAD for the third-period class is about twice the MAD for the fourth-period class.

D. The MAD for the third-period class is greater than the MAD for the fourth-period class.

10. Greg paid $3.60 for a package of 8 nails at the home store. Jorge paid $3.18 for a package of 6 nails at the hardware store. How much more did Jorge pay per nail than Greg?

A. $0.04
B. $0.08
C. $0.42
D. $0.80

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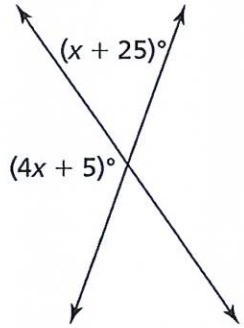
11. Two lines are intersecting. What is the value of x?



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12. Xander's adult cat weighs 2,918 grams. As an 8-week old kitten, Xander's cat weighed 640 grams. What is the percent increase in the kitten's weight rounded to the nearest whole number?

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13. Simplify the following expression: $5(3x) - 3(7x - 2)$

A. $6x + 6$
B. $6 - 6x$
B. $36x + 6$
D. $6 - 36x$

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14. Of all the seventh graders, 70% bought a school lunch yesterday. Ten trials of a simulation are conducted and the data are recorded below.

52461, 65709, 58324, 06381, 94381, 84947, 23046, 33789, 57802, 70633

The numbers 0 through 6 represent students who bought a school lunch yesterday and the numbers 7, 8, and 9 represent students who did not.

Based on the simulated data, what is the probability that 3 or more of a group of students randomly selected will buy the same school lunch the next time it is offered?

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15. Camila is saving money to buy a 5-piece drum set that cost $360. She already has $80.00 saved and can earn the rest of the money by washing 20 cars. If w represents how much she earns for washing each car, which of the following equations can be solved to find how much Camila is paid for washing each car?

A. $20m - 80 = 360$
B. $m(20 + 80) = 360$
C. $360 - 80 = 20m$
D. $80 + m = 360$

16. Each of 6 grocery coupons changes a grocery bill by -$0.40. What is the total amount that a grocery bill changes when all 6 coupons are used?

A. -$6.40

B. -$2.40

C. $2.40

D. $6.40

17.

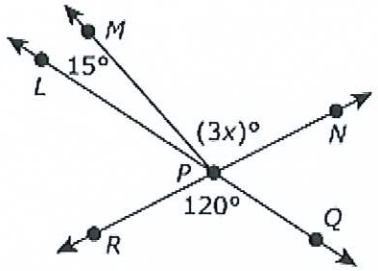
An expression is shown.

$$\frac{6}{7}x + 126y - 84$$

Which expression is equivalent to the expression shown?

- ○ $\frac{1}{7}(6x + 18y - 12)$
- ○ $\frac{1}{7}(6x + 108y - 72)$
- ○ $\frac{6}{7}(x + 126y - 84)$
- ○ $\frac{6}{7}(x + 147y - 98)$

18. This diagram shows point *P* as the endpoint of ray *PM* and the point of intersection of line *LQ* and line *NR*.

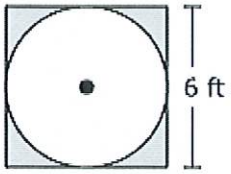


Identify and use the relationship among the angles in the diagram to determine the value of *x*.

Select from the parentheses to correctly complete the sentence.

Since angle *LPN* and angle *QPR* are **(vertical, adjacent, supplementary, or complementary)** angles and angle *MPN* are **(vertical, adjacent, supplementary, or complementary)** angles, the value of x is **(30, 35, 40, 55)**.

19. Paint us used to create a circle on a square canvas. The diagram shows the dimensions, in feet (ft), of the canvas. The shaded part of the diagram represents the part of the canvas that is painted blue.



Which value is closest to the area, in square feet, of the part of the canvas that is painted blue?

A. 5.2

B. 7.7

C. 17.2

D. 26.6

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20. Lisa works for a city. She needs to determine whether the city should build a new fitness center for its residents.

- Lisa surveys all 120 city workers in her office building.
- The survey shows that 75% of the city workers would not use a new fitness center.

Based on the results of the survey, Lisa concludes that the city should not build a new fitness center for its residents. Determine whether the conclusion Lisa makes is valid or is not valid and why.

Select from the parentheses to correctly complete the sentence.

Lisa's conclusion is **(valid or not valid)** because the sample she uses for her survey is **(representative or not representative)** of the residents of the city.

21. The manager of a company interviews people who apply for a job.

- The interviews take place on either Monday (M), Tuesday (T), or Wednesday (W).
- The interviews are scheduled for either 9, 10, 11 in the morning or 2 or 3 in the afternoon.

The manager makes this sample space to show all the possible days and times of the interviews. Which outcomes in the sample space represent interviews scheduled in the afternoon on days other than Monday?

Select **all** correct outcomes.

M9	T9	W9
M10	T10	W10
M11	T11	W11
M2	T2	W2
M3	T3	W3

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22. Juan randomly surveys students in the seventh grade to learn about their favorite type of music. Of 30 respondents, 8 liked to listen to rap music.

Part A

Based on Juan's data, how many of the 150 students in seventh grade like to listen to rap music?

Part B

If Juan conducted his survey based on every 2nd student in an alphabetical list of seventh-grade students, are the results representative of the seventh grade? Select **all** the statements that apply to Juan's survey.

A. The sample is too large.

B. The sample is randomly selected.

C. The sample size is small.

D. The sample size is representative of seventh-grade students.

E. The sample is not randomly selected.

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23. A probability model includes $P(\text{orange}) = \frac{1}{4}$ and $P(\text{green}) = \frac{1}{6}$. Select all the probabilities that could complete the model.

- ☐ $P(\text{blue}) = \frac{1}{4}; P(\text{red}) = \frac{5}{12}$
- ☐ $P(\text{blue}) = \frac{1}{3}; P(\text{red}) = \frac{1}{4}$
- ☐ $P(\text{blue}) = \frac{1}{2}; P(\text{red}) = \frac{1}{12}$
- ☐ $P(\text{blue}) = \frac{2}{3}; P(\text{red}) = \frac{1}{12}$
- ☐ $P(\text{blue}) = \frac{5}{12}; P(\text{red}) = \frac{1}{6}$

24. The table shows the relationship between the number of white shells and the number of pink beads that Aliz uses to decorate 6 different jewelry boxes.

White Shells	2	4	6	8	10	12
Pink Beads	5	10	15	20	25	30

Which of the following equations relates the number of pink beads, p, to the number of white shells, w?

A. $p = \frac{2}{5}w$

B. $5w = 2p$

C. $w = \frac{5}{2}p$

D. $p = \frac{5}{2}w$

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25. Kim's uncle signs up for a 3-year loan with 3% simple interest to buy a car.

Part A

If Kim's uncle pays a total of $765 in interest, how much money did he initially borrow?

Part B

If the simple interest rate was 1% instead of 3%, how much would Kim's uncle save in interest?

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26. The cost to rent a surfboard at the beach is $10.25 an hour plus an insurance fee of $25. Keith spent $55.75 when renting a surfboard on a recent trip to the beach. For how many hours did Keith rent the surfboard?

27. A fire hydrant with a blue cap provides water at a rate of 1,500 gallons per minute. A fire hydrant with an orange cap provides water at a rate of 500 gallons per minute. A fire hydrant with a green cap provides water at two-thirds the rate of a fire hydrant with a blue cap.

Part A

Write an equation to relate the flow of water from the blue hydrant, b, to the flow from the orange hydrant, r.

Part B

Write an equation to relate the flow of water from the green hydrant, g, to the flow of water from the blue hydrant, b.

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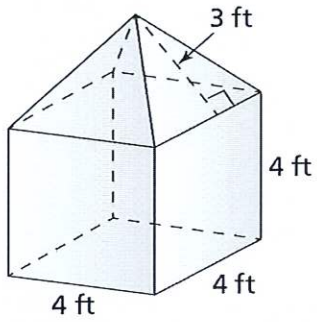
28. Skip builds a new doghouse and wants to paint the outside of the square walls and triangular ceilings. What area does Skip paint?



29. Five boys and six girls enter a contest at a local sports venue. A randomly chosen winner will be awarded a free T-shirt, a free water bottle, or a free autographed poster. What is the probability that a girl will win a poster?

A. $\frac{4}{5}$ **C.** $\frac{5}{11}$

B. $\frac{2}{11}$ **D.** $\frac{6}{11}$

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30. Five-eighteenths of the students surveyed like to play basketball. Which decimal is equivalent to the fraction of students who like to play basketball?

A. 0.7
B. 0.27
C. $0.\overline{27}$
D. $0.2\overline{7}$

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31. The entrance fee to a local waterpark is \$34 per person. At the waterpark, you can rent a raft for \$1.50 per hour. Which expression is equivalent to the amount it would cost Leah for h hours in the park if she rented a raft?

A. $1.50h + 34$
B. $1.50h - 34$
C. $1.50(h - 34)$
D. $1.50(h + 34)$

32. Select all the statements that are true for the cross section of a rectangular prism.

- ☐ The cross section is a cube.
- ☐ The cross section is a rectangle.
- ☐ The vertical cross section is a triangle.
- ☐ The dimensions are the same as the faces of the solid that are parallel to the slice.
- ☐ The shape is the same as the faces of the solid that are parallel to the slice.

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33. A family drives an average speed of 60 miles per hour on a trip from Pensacola to Orlando.

Part A

Write an inequality to show how many hours, h, the family must drive to travel the 438 miles to Orlando.

Part B

For how many hours must the family drive to travel the 438 miles?

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34. A bike tire has a 16-inch diameter. How many complete revolutions will the bike make if it travels 100 feet? Round to the nearest whole revolution.

A. 2 revolutions **C.** 24 revolutions

B. 5 revolutions **D.** 51 revolutions

35. Luis wants to build a raised garden in her backyard. The garden measures 12 feet in length by 12 feet in width by 3 feet in depth. The cost to purchase soil to fill the raised garden is $16.25 per cubic yard. How much will it cost to purchase soil for Luis' raised garden?

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36. Bella wants to draw a right triangle. Two side lengths are 13 units and 5 units. Select all the possible dimensions of the third side.

- ☐ 8 units
- ☐ 12 units
- ☐ 18 units
- ☐ $\sqrt{194}$ units
- ☐ $\sqrt{313}$ units

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37. A landscaper draws a blueprint of the newly landscaped backyard she is designing. The scale she uses is 1 inch = 5 feet. If the length of the backyard is 14 inches, and the width of the backyard is 10 inches, what are the actual dimensions of the backyard?

A. 14 feet in length by 10 feet in width

B. 50 feet in length by 70 feet in width

C. 70 feet in length by 50 feet in width

D. 70 feet in length by 70 feet in width

38. The average cost of jet fuel per gallon in 2014 was $2.82. In 2015, it decreased $0.95 per gallon.
In 2016, it decreased another $0.45 per gallon. The average cost increased $0.26 per gallon in 2017. What was the average cost per gallon at the end of 2017?

A. $1.42 **C.** $1.87
B. $1.68 **D.** $2.58

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39. A bucket contains 6 marbles: 1 blue, 2 red, 1 green, and 2 yellow. Select all of the statements that are representative of this probability model.

- ☐ The probability of randomly selecting a blue marble is equal to the probability of randomly selecting a green marble.
- ☐ The probability of randomly selecting a red marble is equal to the probability of randomly selecting a green or yellow marble.
- ☐ The probability of randomly selecting a yellow marble is equal to the probability of randomly selecting a red marble.
- ☐ The probability of randomly selecting a blue or yellow marble is equal to the probability of randomly selecting a red marble.
- ☐ The probability of randomly selecting a green or yellow marble is equal to the probability of randomly selecting a blue or red marble.

40. Ben tosses a number cube 350 times. The results are shown.

Number	Times Tossed
1	65
2	55
3	90
4	47
5	62
6	31

Based on these results, what is the estimated probability that an odd number will be tossed?

A. $\frac{16}{100}$ **C.** $\frac{62}{100}$
B. $\frac{22}{100}$ **D.** $\frac{90}{100}$

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41. Principal Kane wants to determine the eighth graders' preference for food at their end-of-year party. Which of the samples is representative of the population?

A. All students in the school.
B. Every eighth grade student in Ms. Chen's fifth period math class.
C. Every fifth student from all the eighth graders in the entire school district
D. Every sixth student from a list of eighth grade students in the school.

42. The table represents different lengths of chain fencing and the total cost of each.

Length in feet	6	15	24	30
Total Cost	$42.00	$105.00	$168.00	$210.00

Part A

Select all of the statements which describe the relationship between these two quantities.

- ☐ The ratios in this table are not equivalent.
- ☐ The ratios in this table are equivalent.
- ☐ The two quantities in this table represent a proportional relationship.
- ☐ The two quantities in this table do not represent a proportional relationship.
- ☐ The graph of this relationship would be a straight line through the origin.

Part B

Identify the constant of proportionality.

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43. Which expression is equivalent to the expression $-6.4 - 12 + 4.6$?

A. $-(6.4 + 12 + 4.6)$

B. $4.6 + 6.4 - 12$

C. $4.6 - 6.4 - 12$

D. $6.4 + (-12) + (-4.6)$

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44. The temperature at 12:00 P.M. was 8°C. At 7:00 P.M., the temperature was –6°C. What was the change in temperature (in degrees Celsius)?

A. 6-degree increase

B. 14-degree increase

C. 6-degree decrease

D. 14-degree decrease

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45. In the town of Destin, $\frac{2}{3}$ of the students in middle school participate in organized sports after school. If $\frac{3}{5}$ of the students who participate in organized sports after school play soccer, what fraction of the students play soccer?

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46. Carl has a spinner that is equally divided into 8 parts and numbered 1-8. If Carl spins the spinner and then tosses a coin, what is the probability that the spinner will land on 2 and the coin lands on heads?

A. $\frac{1}{2}$

B. $\frac{1}{8}$

C. $\frac{2}{8}$

D. $\frac{1}{16}$

Name : _____ Score : _____

Teacher : _____ Date : _____

Solve the Equations

Round your answers to the nearest hundredth if needed.

1) $20k - 19 = -17$

2) $\frac{5}{6}h - 4 = 22$

3) $\frac{r - 4}{-24} = -28$

4) $-24 + \frac{5}{6}x = 26$

5) $\frac{12 + a}{27} = -3$

6) $\frac{y - 12}{11} = 21$

7) $\frac{d + 7}{-24} = 17$

8) $\frac{27 - b}{3} = 16$

9) $-5 - 14v = -24$

10) $\frac{z + 28}{26} = -15$

Name : _____ Score : _____

Teacher : _____ Date : _____

Simplifying Algebraic Expressions

1) $-2(7 - 6d) + 5$

2) $-9(7 + 6d)$

3) $-8(-4s - 3)$

4) $5 + 4(-7p + 3)$

5) $-3(2z + 4)$

6) $3x + 5(-9 - 4x)$

7) $5(-9 + 3q)$

8) $7(-6p + 3) - 9$

9) $4 + 2(-3 - 9c)$

10) $-4(5f - 9)$