

Name _____

7th Final
Study Guide

Part
I

1. Which of the following expressions is equivalent to $-\frac{5}{6} \div -\frac{1}{3}$? Select all that apply.

- $(-\frac{5}{6}) \cdot (-3)$
- $(-\frac{6}{5}) \cdot (-3)$
- $(-\frac{6}{5}) \cdot (-\frac{1}{3})$
- $(\frac{5}{6}) \div (\frac{1}{3})$
- $\frac{5}{6} \cdot (-3)$

16. A student council president wants to learn about the preferred theme for the upcoming spring dance. Which of the following samples are representative of the population? Select all that apply.

- All students at her lunch table
- Every fifteenth student who enters the school in the morning
- All students on her bus
- Every ninth student from an alphabetical list of students
- All seventh graders

26. Natalie opened a bank account that earns 2.5% simple interest. If her account earned \$180 over ten years, how much was Natalie's initial deposit when she opened the account?

- (A) \$0.45
- (B) \$108
- (C) \$720
- (D) \$7200

3. A fruit stand sells mangoes for \$3.49 per pound, papayas for \$1.40 per pound, and coconuts for \$1.24 per pound.

Part A

Write an expression to represent the total price of m pounds of mangoes, p pounds of papayas, and c pounds of coconuts.

Part B

What is the total cost of 3 pounds of mangoes, 4 pounds of papayas, and 6 pounds of coconuts?

23. A store buys an item for \$28 and sells it for \$35. What is the percent markup?

- (A) 20%
- (B) 25%
- (C) 32.5%
- (D) 63%

24. Paint costs \$3.99 per can and brushes cost \$2.50 each. The sales tax rate is 5%. Which expression represents the total cost of p cans of paint and b paint brushes?

- (A) $3.99p + 2.50b$
- (B) $0.05(3.99p + 2.50b)$
- (C) $1.05(3.99p + 2.50b)$
- (D) $-1.05(3.99p + 2.50b)$

19. Find the solution of the equation below.

$$6(3x - 7.2) = 25.2$$

- (A) $x = -1$
- (B) $x = 1$
- (C) $x = 1.8$
- (D) $x = 3.8$

22. Cindy spent \$15.25 on ingredients for a blueberry pie and \$12.84 on ingredients for a cherry pie. Each slice of pie sells for \$3.50.

Part A

Write an expression to represent Cindy's profit if she sells b slices of blueberry pie and c slices of cherry pie.

Part B

Cindy sells 24 slices of blueberry pie and 15 slices of cherry pie. What was her profit?

7. Kaylee obtains a loan with simple interest to buy a car that costs \$8,500. If Kaylee pays \$1,020 in interest during the four-year term of the loan, what was the rate of simple interest?

14. Kai randomly surveys eighth graders at his school and learns that 7 of 35 respondents own a video gaming system. Based on these data, how many of the 150 eighth-grade students in Kai's school would be expected to own a video gaming system?

- (A) 15 students
- (B) 25 students
- (C) 30 students
- (D) 50 students

9. A community service group organizes a car wash that raises $7c - 18$ dollars and a spaghetti dinner that raises $6s - 45$ dollars. Which equation below represents the total amount of money raised?

- (A) $13cs - 63$
- (B) $7c + 6s + 63$
- (C) $7c + 6s - 63$
- (D) $7c + 6s - 27$

10. Maxwell's vegetarian tacos require $\frac{3}{4}$ tablespoon of chili powder for every $\frac{1}{2}$ pound of vegetables. How much chili powder will Maxwell need if he uses $1\frac{3}{4}$ pounds of vegetables?

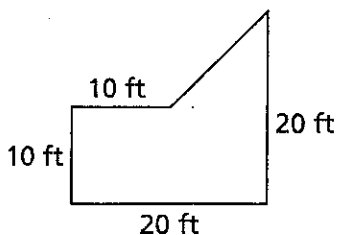
- (A) $2\frac{1}{4}$ tablespoons
- (B) $2\frac{1}{2}$ tablespoons
- (C) $2\frac{5}{8}$ tablespoons
- (D) $3\frac{1}{4}$ tablespoons

6. The wheels on a bike have a diameter of 26 inches. How many full revolutions will the wheels need to make to travel 100 feet?

- (A) 4 revolutions
- (B) 8 revolutions
- (C) 15 revolutions
- (D) 82 revolutions

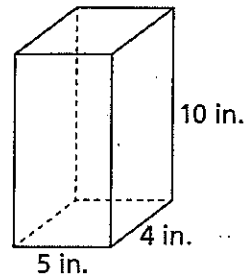
7. A circular aluminum sign has a radius of 28 centimeters. If a sheet of aluminum costs \$0.33 per square centimeter, how much will it cost to make the sign? Use 3.14 to approximate π .

8. Victoria is carpeting a playroom as shown in the diagram below. How many square feet of carpeting will Victoria need to buy?



- (A) 100 ft²
- (B) 250 ft²
- (C) 300 ft²
- (D) 400 ft²

9. Marcia needs a packing box with a volume of at least 180 cubic inches.



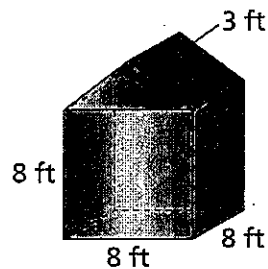
Part A

Is the box the correct size? Explain.

Part B

Shipping costs \$0.15 per cubic inch. How much will Marcia pay to ship the box?

10. If Kawan paints the visible outside surfaces of his shed, what is the total surface area he paints?



- (A) 256 ft²
- (B) 286 ft²
- (C) 360 ft²
- (D) 444 ft²

1. The random numbers below represent 15 trials of a basketball simulation conducted using a spinner numbered 0–8.

76645, 46757, 28334, 81357, 52453,
21761, 51537, 62385, 62135, 16687,
41662, 27135, 45445, 33858, 86427

Let the number 1 represent a 3-point basket and the numbers 2–8 represent 2-point baskets. Based on the simulation, what is the probability that at least one of the next 5 baskets made by the team is a 3-pointer?

- (A) $\frac{5}{15}$
- (B) $\frac{6}{15}$
- (C) $\frac{7}{15}$
- (D) $\frac{8}{15}$

2. Ms. Lee is handing out wristbands as students enter the dance. There are 40 black, 20 yellow, 25 orange, and 15 purple wristbands. If Melanie is handed a wristband, what is the probability the color is orange?

- (A) $\frac{1}{5}$
- (B) $\frac{1}{4}$
- (C) $\frac{2}{5}$
- (D) $\frac{3}{4}$

9. Which of the following probability models would the probability $P(C) = \frac{1}{3}$ complete?

- (A) $P(A) = \frac{1}{9}, P(B) = \frac{1}{2}$
- (B) $P(A) = \frac{1}{9}, P(B) = \frac{2}{9}$
- (C) $P(A) = \frac{1}{6}, P(B) = \frac{3}{9}$
- (D) $P(A) = \frac{2}{9}, P(B) = \frac{8}{18}$

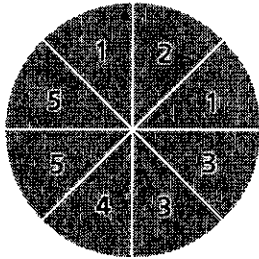
4. A digital board game has 25 squares with 5 squares of each color. The results of 625 games are shown below.

Color	Frequency
Green	119
Orange	130
Pink	126
Violet	114
Yellow	136

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

1. Jonah's cell phone came with 64 GB of memory. He has used 15 GB. He then uses 5 MB of memory to record photos and videos from a trip. Use the addition expression $64 + (-15) + (-5)$ to find how much memory is left on his phone.

6. In a game of chance, players spin a pointer on a spinner with eight equal-sized sections.



Part A

What is the sample space of this game?

Part B

What are the probabilities of each outcome in the sample space?

16. **Higher Order Thinking** Ari walked $2\frac{3}{4}$ miles at a constant speed of $2\frac{1}{2}$ miles per hour. Beth walked $1\frac{3}{4}$ miles at a constant speed of $1\frac{1}{4}$ miles per hour. Cindy walked for 1 hour and 21 minutes at a constant speed of $1\frac{1}{8}$ miles per hour. List the three people in order of the times they spent walking from least time to greatest time.

2. Four out of nine dogs weigh less than 20 pounds. What is the decimal equivalent for the number of dogs weighing under 20 pounds?

- (A) $0.\bar{2}$
- (B) 0.24
- (C) $0.\bar{4}$
- (D) 0.49

14. **Make Sense and Persevere** A large university accepts 70% of the students who apply. Of the students the university accepts, 25% actually enroll. If 20,000 students apply, how many enroll? MP.1

10. Craig likes to collect vinyl records. Last year he had 10 records in his collection. Now he has 12 records. What is the percent increase of his collection?

9. Which of the following probability models would the probability $P(C) = \frac{1}{3}$ complete?

- (A) $P(A) = \frac{1}{9}, P(B) = \frac{1}{2}$
- (B) $P(A) = \frac{1}{9}, P(B) = \frac{2}{9}$
- (C) $P(A) = \frac{1}{6}, P(B) = \frac{3}{9}$
- (D) $P(A) = \frac{2}{9}, P(B) = \frac{8}{18}$

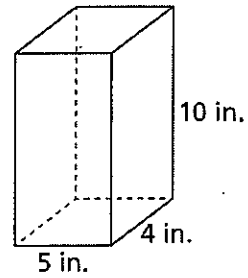
6. The wheels on a bike have a diameter of 26 inches. How many full revolutions will the wheels need to make to travel 100 feet?

- (A) 4 revolutions
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- (D) 82 revolutions

7. A circular aluminum sign has a radius of 28 centimeters. If a sheet of aluminum costs \$0.33 per square centimeter, how much will it cost to make the sign? Use 3.14 to approximate π .

6. Each sheet cake requires 3 cups of flour and 2 cups of sugar. If a bakery has 75 cups of flour and 75 cups of sugar, how many sheet cakes can be made? Will there be any ingredients left over? Explain.

9. Marcia needs a packing box with a volume of at least 180 cubic inches.



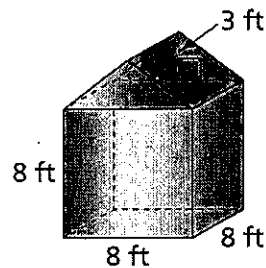
Part A

Is the box the correct size? Explain.

Part B

Shipping costs \$0.15 per cubic inch. How much will Marcia pay to ship the box?

10. If Kawan paints the visible outside surfaces of his shed, what is the total surface area he paints?



- (A) 256 ft²
- (B) 286 ft²
- (C) 360 ft²
- (D) 444 ft²

6. Jed is baking shortbread for a bake sale. The recipe calls for $1\frac{1}{4}$ cups of flour and $\frac{1}{2}$ stick of butter. How many cups of flour will Jed need if he uses 3 sticks of butter?

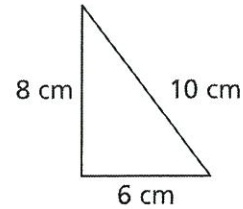
9. Erik rides his motorbike $26\frac{2}{3}$ miles in $\frac{2}{3}$ hour. What is Erik's average speed in miles per hour?

2. Which of the following could represent cross sections of a cylinder?

- (A) Circle and pentagon
- (B) Circle and rectangle
- (C) Circle and hexagon
- (D) Circle and sphere

4. Claire boarded an airplane in Richmond, VA, and flew 414 miles directly to Charleston, SC. The total flight time was $\frac{3}{4}$ hour. How fast did Claire's airplane fly, in miles per hour?

4. The blueprint of a deck has a scale of 2 centimeters equals 9 feet. The scale drawing is shown below.



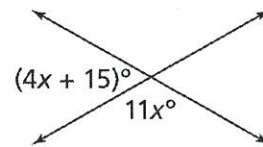
Part A

What are the actual lengths of the sides of the deck?

Part B

Decking costs \$1.75 per square foot. How much will it cost to build the deck?

5. What is the value of x ?



- (A) $x = 5$
- (B) $x = 11$
- (C) $x = 59$
- (D) $x = 121$

21. Find the solution of the following equation.

$$3.75x + 15 = 63.75$$

- (A) $x = 4$
- (B) $x = 8$
- (C) $x = 13$
- (D) $x = 17$

20. The temperature of chicken soup is 192.7°F . As it cools, the temperature of the soup decreases 2.3°F per minute.

Part A

What is the temperature of the soup after 25 minutes?

Part B

How many minutes will it take for the soup to cool to 100.7°F ?

14. Which expression is equivalent to $24x + 12$? Select all that apply.

- $2(12x + 6)$
- $-6(-4x - 2)$
- $-3(8x - 4)$
- $12(1 + 2x)$
- $-4(-6 - 3x)$

15. James borrows \$4,200 to pay his college tuition. He signs a 5-year simple interest loan. If the monthly payments are \$78.40, what is the interest rate on the loan?

- (A) 2%
- (B) 2.4%
- (C) 3%
- (D) 3.2%

2. Kyle and Nadim are on the same space on a board game they are playing. Kyle moves back 2 spaces in one turn and moves back 3 more spaces in his second turn. Nadim has remained in the same place. What integer represents Kyle's location relative to Nadim's location on the game board?

25. On a cross-country bicycle trip, participants ride about 75 miles per day. Approximately how many days, d , must they ride to travel at least 4,325 miles?

Part A

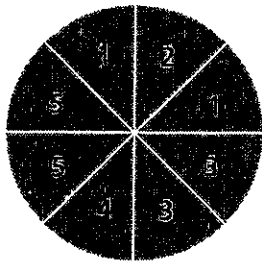
Write an inequality to represent the situation.

Part B

Solve the inequality. What does the solution represent in this situation?

15. A band expects to have 16 songs on their next album. The band writes and records 62.5% more songs than they expect to have in the album. During the editing process, 50% of the songs are removed. How many songs will there be in the final album?

6. In a game of chance, players spin a pointer on a spinner with eight equal-sized sections.



Part A

What is the sample space of this game?

Part B

What are the probabilities of each outcome in the sample space?

27. Solve the equation below.

$$\frac{1}{4}x + 3\frac{1}{2} = 2\left(\frac{1}{2}x + \frac{3}{4}\right)$$

28. Riley records the number of homework assignments completed by randomly selected students in her school on Monday in the table below.

Grade	Assignments Completed
eighth	5, 4, 5, 4, 4, 5, 4, 5
seventh	6, 5, 5, 5, 6, 6, 5, 6
sixth	5, 3, 4, 3, 5, 4, 4, 4

Make a comparative inference based on the mean values of each data set.

29. Lincoln is saving \$360 to buy a new bike. He already has \$85 and can earn \$12 per hour at work. Which of the following equations describes the number of hours, h , for which Lincoln must work to earn enough money to buy the new bike?

- (A) $360 - 12 = 85h$
- (B) $360h = 12 + 85$
- (C) $360 - 85 = 12h$
- (D) $85 = 360 + 12h$

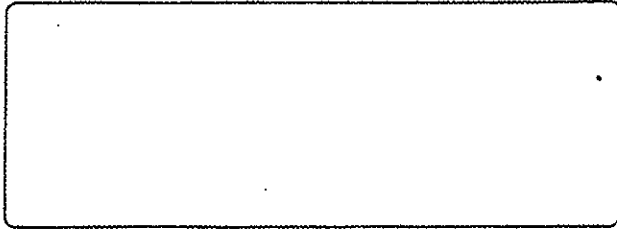
30. Dave is 8 years younger than 4 times Julia's age. If Dave is 16, how old is Julia?

- (A) 6 years
- (B) 24 years
- (C) 32 years
- (D) 56 years

17. A garden contains 135 flowers, each of which is either red or yellow. There are 3 beds of yellow flowers and 3 beds of red flowers. There are 30 yellow flowers in each yellow flower bed.

PART A

If r represents the number of red flowers in each red flower bed, what equation could you use to represent the number of red and yellow flowers?



PART B

Write another real-world situation that your equation from Part A could represent.

