

## MODULE

## 6

## Expressions and Equations

## Module Quiz: B

1. Which of the following is the solution to the equation below?

$$x - 1.4 = 0.6$$

- A 0.8                      C 1.2  
B 1.0                      D 2.0
2. Lani opened a savings account with \$450. She saves \$225 per month. Which equation shows how much money Lani has in her account after  $m$  months?

A  $y = -\frac{450}{225}m$

B  $y = 450m + 225m$

C  $y = 450 + 225m$

D  $y = 225 + 450m$

3. What is the value of  $y$  that satisfies the equation below?

$$\frac{y}{3} = 12$$

- A 3                      C 36  
B 4                      D 63
4. Kimmy earns a \$200 commission on all sales plus a base salary of \$30,000. Her total income last year was \$80,000. Which equation can be used to calculate the number of Kimmy's sales?
- A  $30,000 + 200x = 80,000$   
B  $30,000 - 200x = 80,000$   
C  $200 + 30,000x = 80,000$   
D  $80,000 + 200x = 30,000$

5. Rashida owns a bike rental company. She charges an initial fee of \$10 for each rental and an hourly rate of \$4. Which of the equations below shows the amount  $y$  that Rashida charges for a bike rental that lasts  $x$  hours?

A  $y = 10 + 4x$                       C  $y = 4 + 10x$

B  $y = 10 - 4x$                       D  $y = 4 - 10x$

6. Which of the following uses the Distributive Property?

A  $0.4 \times (2a - 0.3b) = 0.4 + (2a - 0.3b)$

B  $0.4 \times (2a - 0.3b) = \frac{(2a - 0.3b)}{0.4}$

C  $0.4 \times (2a - 0.3b) = 0.8a - 0.12b$

D  $0.4 \times (2a - 0.3b) = 0.8a \times 0.12b$

7. The chess club has 50 members. They want to raise \$680 for a trip to a competition. The school will give \$130. How much must each member pay?

A \$5                      C \$11

B \$10                      D \$550

8. Which of the following ratios is **not** equivalent to 1:4?

A  $\frac{1}{2}$                       C  $\frac{3}{12}$

B  $\frac{2}{8}$                       D  $\frac{4}{16}$

9. Which of the following values does **not** satisfy the inequality  $-2x - 6 \leq 1$ ?

A -4                      C -2

B -3                      D -1

10. Alexa started a race with a 50-meter head start. She ran at a rate of 6.25 meters per second. After how many seconds was Alexa 200 meters past the starting line?

A 20                      C 32

B 24                      D 40

11. Jamie has 6 quarters and some dimes in his pocket. The total value of the coins is \$4.50. How many dimes does he have in his pocket?

A 10                      C 30

B 20                      D 40

**MODULE**  
**6**

# Expressions and Equations

12. Massimo has \$90 in the bank. Every time he rides the bus he spends \$2.50. Write and solve an equation that Massimo can use to see how many times he can ride the bus.

\_\_\_\_\_

13. Timani bought a video game console and some games for \$350. The video game console cost \$200. Each game cost \$25. How many games did Timani purchase?

\_\_\_\_\_

14. Allison bought some shirts for her clothing store for \$15 each. She received \$50 off her entire purchase and spent a total of \$400. How many shirts did Allison purchase for her store?

\_\_\_\_\_

15. Jane has 6 more than half the number of pairs of shoes that Mercedes has. Write an expression for this.

\_\_\_\_\_

16. Write a word phrase for  $0.3x + 5$ .

\_\_\_\_\_

17. Kelly has 4 dimes and some nickels. The total value of her coins is \$2.25. Write an equation for this.

\_\_\_\_\_

\_\_\_\_\_

18. Solve for  $x$ .

$$0.25x = 10$$

\_\_\_\_\_

19. Paco solved the equation  $-3x - 5 = 1$ . His work is shown below.

Step 1:  $-3x - 5 = 1$

Step 2:  $-3x = 6$

Step 3:  $x = 2$

Where did Paco make an error in his calculation? Explain.

\_\_\_\_\_

\_\_\_\_\_

20. Oswaldo earns a salary of \$2,500 per month plus an 8% commission on all of his sales. He wants to earn \$5,400 next month. Write an equation that shows what his total sales  $s$  must be in order for Oswaldo to reach his goal.

\_\_\_\_\_

21. Wallace has a \$50 bill. Pizza pies cost \$12.25 each. If  $p$  represents the number of pizzas he buys, write an expression for the change he receives.

\_\_\_\_\_

22. Juma earns \$12.50 for each newspaper subscription he sells. He also earns a \$50 base salary each week. If he wants to earn \$400 next week, how many newspaper subscriptions does he need to sell? Write an equation and solve.

\_\_\_\_\_

1

**MODULE**  
**7**
**Inequalities**
**Module Quiz: B**

1. What is a value of  $y$  that satisfies the inequality below?

$$\frac{y}{3} \leq 12$$

- A 42                                      C 38  
 B 39                                      D 36
2. Which of the following is a solution to the inequality below?

$$2x > 6$$

- A -3                                      C 3  
 B 2                                        D 5
3. Parvinder wants to save \$500 for a trip. Which inequality shows the least amount she must save each month for 6 months to accomplish this?

- A  $6x \leq 500$                       C  $6x \geq 500$   
 B  $6x < 500$                         D  $x \geq 500 + 6$

4. TJ earns a 20% commission on all sales plus a base salary of \$40,000. His total income last year was more than \$70,000. Which inequality can be used to calculate the minimum number of TJ's sales?

- A  $40,000 + 0.2x \geq 70,000$   
 B  $40,000 - 0.2x \geq 70,000$   
 C  $0.2 + 40,000x \geq 70,000$   
 D  $70,000 + 0.2x \geq 40,000$

5. Tony wants to buy a ticket for \$15.75. He has \$9.25. How much must he earn to buy the ticket?

- A at least \$6.00  
 B less than \$6.00  
 C at least \$6.50  
 D at least \$7.00

6. Peggy wants to run 5 miles in less than 60 minutes. What inequality shows what her rate should be?

- A  $1 \text{ mi} < 60 \text{ min}$               C  $1 \text{ mi} < 12 \text{ min}$   
 B  $3 \text{ mi} < 60 \text{ min}$               D  $2 \text{ mi} < 30 \text{ min}$

7. There are 125 members in the school marching band. The band wants to raise \$25,000 for a trip to a national competition. The school agreed to contribute \$5,000 towards the trip. Which inequality shows the amount of money that each band member should raise?

- A  $125x + 25,000 \geq 5,000$   
 B  $125x + 5,000 \geq 25,000$   
 C  $5,000x + 125 \geq 25,000$   
 D  $5,000x + 25,000 \geq 125$

8. Which of the following is the solution to the inequality  $-2x - 4 \leq 11$ ?

- A  $x \leq -\frac{15}{2}$                       C  $x \geq -\frac{15}{2}$   
 B  $x \leq -\frac{7}{2}$                         D  $x \geq -\frac{7}{2}$

9. Which of the following ratios is **not** equivalent to 2:10?

- A  $\frac{1}{5}$                                       C  $\frac{4}{20}$   
 B  $\frac{2}{5}$                                       D  $\frac{6}{30}$

10. Which of the following values does **not** satisfy the inequality  $-2x - 6 \leq 1$ ?

- A -4                                      C -2  
 B -3                                      D -1

11. Michele needs 30 ounces of pecans to bake some pies. Pecans are sold in 4-ounce packages. Which inequality could be used to find the least number of packages of pecans she has to buy?

- A  $\frac{30}{x} \leq 4$   
 B  $\frac{4}{x} \leq 30$   
 C  $4x \geq 30$   
 D  $x \leq 30 - 4$

**MODULE**  
**7**

**Inequalities**

12. Solve the inequality. Show your work.

$$\frac{x}{6} \leq 1$$

\_\_\_\_\_

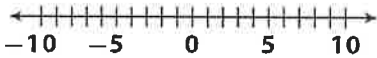
Use the inequality for 13 and 14.

$$x + 8 \geq 5$$

13. Solve the inequality. Show your work.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

14. Graph the solution on the number line.



Use the inequalities for 15–17.

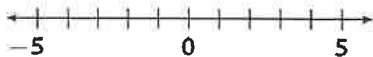
$$-3x > 9$$

$$3x > -9$$

15. Explain the difference between the two inequalities. How does this affect your method of solution?

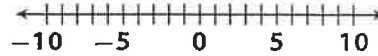
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

16. Solve the first inequality and graph its solution on the number line.



\_\_\_\_\_

17. Solve the second inequality and graph its solution on the number line.



\_\_\_\_\_

18. Raja solved the inequality  $-3x - 5 \leq 1$ . His work is shown below.

Step 1:  $-3x - 5 \leq 1$

Step 2:  $-3x \leq 6$

Step 3:  $x \leq -2$

Where did Raja make an error in his calculation? Explain.

\_\_\_\_\_  
\_\_\_\_\_

19. Joaquim earns a salary of \$4,000 per month plus a 6% commission on all of his sales. He wants to earn at least \$7,000 next month. Write an inequality that shows what his total sales  $s$  must be in order for Joaquim to reach his goal.

\_\_\_\_\_

20. Every month, the bank withdraws \$15 from Betsy's checking account as a service fee. Betsy has budgeted \$75 for the next few service fees. For how many months will the service fee be covered? Write and solve an inequality to find the solution. Show your work.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MODULE**  
**12****Experimental Probability****Module Quiz: B**

- Denise rolls a number cube that has sides labeled 1 to 6 and then flips a coin. What is the probability that she rolls an odd number and flips heads?  
A  $\frac{1}{8}$                       C  $\frac{1}{2}$   
B  $\frac{1}{4}$                       D  $\frac{3}{4}$
- There are 4 jacks in a standard deck of 52 playing cards. If Patricia selects a card at random, what is the probability that it will be a jack?  
A  $\frac{1}{52}$                       C  $\frac{1}{2}$   
B  $\frac{1}{13}$                       D  $\frac{12}{13}$
- The experimental probability that Kevin will catch a fly ball is equal to  $\frac{7}{8}$ . About what percent of the time will Kevin catch a fly ball?  
A 55%                      C 77%  
B 66%                      D 88%
- Janelle's Office Supply shop sells 2 types of notebooks. Each notebook is offered in red, blue, or yellow. If a notebook is selected at random, how many different possibilities are in the sample space?  
A 4                      C 8  
B 6                      D 16
- Morgan saw 10 blue, 8 red, and 42 white cars drive by her house in 1 hour. What is the experimental probability that the next car that drives by her house will **not** be a white car?  
A 0.3                      C 0.6  
B 0.5                      D 0.7
- If the probability of an event is 0.99, which of the following best describes the event?  
A The event will never occur.  
B There is a small chance that the event will occur.  
C The event is likely to occur.  
D The event will definitely occur.
- A rectangle has a width of 10 inches and a length of 12 inches. A similar rectangle has a width of 15 inches. What is the length of the similar rectangle?  
A 12 in.                      C 16 in.  
B 14 in.                      D 18 in.
- The experimental probability that Jessica will hit the ball when she is at bat is  $\frac{2}{5}$ . If she is at ball 50 times in a season, how many times can Jessica expect to hit the ball?  
A 15                      C 25  
B 20                      D 30
- Philip has a box of crayons. 45 are yellow, 12 are green, 25 are blue, and 7 are red. If Philip selects a crayon at random, which color crayon would he be **most** likely to select?  
A green                      C red  
B blue                      D yellow
- Celine flipped a coin 100 times. She flipped heads 41 times and tails 59 times. What is the experimental probability that the next flip will be heads?  
A  $\frac{41}{100}$                       C  $\frac{59}{100}$   
B  $\frac{1}{2}$                       D  $\frac{3}{4}$

**MODULE**  
**12**

**Experimental Probability**

11. A number cube has sides labeled 1 to 6. Connie rolls the number cube 12 times. She rolls a 5 three times. What is the experimental probability that her next roll will **not** be a 5?

\_\_\_\_\_

12. Suki has 54 rock songs, 92 dance songs and 12 classical songs on her playlist. If Suki's music player randomly selects a song from the playlist, what is the probability that the song will **not** be a classical song?

\_\_\_\_\_

13. **Dominick's Survey Results**

| Food      | Number of Students |
|-----------|--------------------|
| Pizza     | 8                  |
| Hamburger | 12                 |
| Pasta     | 14                 |
| Steak     | 6                  |

Dominick recorded the favorite food of students in his class. Based on the results of his survey, what is the experimental probability the next student he surveys will respond "Pizza" or "Steak"?

\_\_\_\_\_

14. The experimental probability of rain in a certain town is 20 percent. In the next 45 days, how many days can one expect it to rain?

\_\_\_\_\_

15. Alessandro painted  $\frac{1}{3}$  of a wall in 45 minutes. If he keeps painting at the same rate, how much longer will it take him to finish painting the wall?

\_\_\_\_\_

16. **Cathy's Color Picks**

| Color  | Frequency |
|--------|-----------|
| Red    | 10        |
| Yellow | 5         |
| Blue   | 12        |
| Orange | 28        |

Cathy conducted an experiment in which she placed red, yellow, blue, and orange pieces of paper in a hat and drew them out without looking. The number of times Cathy drew each color is shown in the table above. What is the experimental probability that the next slip of paper Cathy draws will be orange?

\_\_\_\_\_

17. The experimental probability that Amir will make a basket is 0.4. The experimental probability that Juju will make a basket is 0.6. If Amir and Juju each shoot 150 baskets, about how many more baskets will Juju be expected to make?

\_\_\_\_\_

18. Daria selected a number from the positive integers less than 10. What is the probability that she selected a prime number?

\_\_\_\_\_

**MODULE**  
**13**
**Theoretical Probability and Simulations**
**Module Quiz: B**

- What is the probability of flipping a coin 3 times and getting 3 heads?
 

|                 |                 |
|-----------------|-----------------|
| A $\frac{1}{8}$ | C $\frac{1}{2}$ |
| B $\frac{1}{4}$ | D $\frac{3}{4}$ |
- Two number cubes each have sides that are labeled 1 to 6. Isis rolls the 2 number cubes. What is the probability that the sum of the numbers rolled will equal 4?
 

|                  |                  |
|------------------|------------------|
| A $\frac{1}{36}$ | C $\frac{1}{12}$ |
| B $\frac{1}{18}$ | D $\frac{1}{6}$  |
- Dustin has a spinner that is divided into 5 equal-size sections colored red, blue, orange, white, and green. What is the probability that Dustin spins pink on the next spin?
 

|        |        |
|--------|--------|
| A 0    | C 0.5  |
| B 0.25 | D 0.75 |
- Isidro flips a fair coin 40 times. How many times can he expect heads to appear?
 

|      |      |
|------|------|
| A 4  | C 15 |
| B 10 | D 20 |
- A number cube has sides labeled 1 to 6. Hannah rolls the number cube 18 times. How many times can she expect to roll a number less than 3?
 

|     |     |
|-----|-----|
| A 2 | C 6 |
| B 3 | D 8 |
- Flavia has a bag with 8 white balls, 9 red balls, 14 green balls, and 10 orange balls. If she chooses a ball from the bag without looking, which color ball will Flavia be **least** likely to choose?
 

|         |          |
|---------|----------|
| A white | C green  |
| B red   | D orange |
- Without looking, Tammy takes a marble out of a bag that contains 10 red marbles, 15 green marbles, and 25 blue marbles. She records its color and returns the marble to the bag. If Tammy repeats this process 90 times, how many times can she expect to pull out a red marble?
 

|      |      |
|------|------|
| A 5  | C 15 |
| B 10 | D 18 |
- Caelin drives at 30 miles per hour. How many hours will it take him to drive 210 miles?
 

|       |       |
|-------|-------|
| A 5 h | C 7 h |
| B 6 h | D 8 h |
- Alexander spins a spinner with four equally-sized regions and flips a coin. How many outcomes are possible?
 

|     |      |
|-----|------|
| A 2 | C 8  |
| B 6 | D 36 |
- Scarlett selects a card at random from a deck that contains 18 red, 12 yellow, and 20 blue cards. What is the probability that she does **not** select a red card?
 

|                   |                   |
|-------------------|-------------------|
| A $\frac{13}{25}$ | C $\frac{18}{25}$ |
| B $\frac{16}{25}$ | D $\frac{24}{25}$ |
- Bella rolls 2 number cubes 60 times. How many times can she expect the sum of the numbers to be greater than 10?
 

|     |      |
|-----|------|
| A 3 | C 10 |
| B 5 | D 12 |
- Glen has 3 pairs of shoes, 5 shirts, and 4 pairs of pants. How many outfits consisting of 1 pair of shoes, 1 shirt, and 1 pair of pants can he make?
 

|      |      |
|------|------|
| A 12 | C 30 |
| B 20 | D 60 |

**MODULE**  
**13**

**Theoretical Probability and Simulations**

13. Two number cubes each have sides labeled 1 to 6. Ann rolls both number cubes. On the first roll, the sum of the numbers was equal to 10. On the second roll, the sum of the numbers was equal to 7. Which sum was more likely to occur? Explain.

---



---



---



---

14. **Simran's Simulation Results**

| Trial | Numbers Generated | Trial | Numbers Generated |
|-------|-------------------|-------|-------------------|
| 1     | 1, 1, 3, 3        | 6     | 4, 5, 5, 5        |
| 2     | 3, 4, 5, 5        | 7     | 3, 4, 4, 5        |
| 3     | 2, 3, 4, 4        | 8     | 2, 2, 2, 1        |
| 4     | 1, 3, 4, 4        | 9     | 4, 5, 5, 3        |
| 5     | 3, 4, 4, 5        | 10    | 3, 3, 3, 3        |

Simran used a simulation to predict the number of defective parts that are produced in a factory. Random numbers are generated. A number 1 indicates that the part is defective. Numbers 2, 3, 4, or 5 indicate that the part is not defective. Of the next four parts produced, what is the experimental probability that none of the parts are defective?

---



---



---



---

15. Fatima bought a video game that has a regular price of \$45. The game was on sale for 15 percent off, and she paid sales tax of 7 percent. What was the price Fatima paid for the video game?

16. Constantine walked 4 miles in 50 minutes. If he continues walking at this pace, how many minutes will it take him to walk 6 miles?

---

17. **Simran's Simulation Results**

| Trial | Numbers Generated | Trial | Numbers Generated |
|-------|-------------------|-------|-------------------|
| 1     | 1, 1, 3, 3        | 6     | 4, 5, 5, 5        |
| 2     | 3, 4, 5, 5        | 7     | 3, 4, 4, 5        |
| 3     | 2, 3, 4, 4        | 8     | 2, 2, 2, 1        |
| 4     | 1, 3, 4, 4        | 9     | 4, 5, 5, 3        |
| 5     | 3, 4, 4, 5        | 10    | 3, 3, 3, 3        |

Simran used a simulation to predict the number of days of rain in his town. A number 1 or 2 indicates a week in which it rained. Numbers 3, 4, or 5 indicate a week in which it did not rain. The results of the simulation are shown above. What is the experimental probability that it will rain in Simran's town in at least 1 of the next 4 weeks?

---

18. Each student in a class of 25 students wrote down a random digit. What is the predicted number of students who wrote a digit that is greater than 7?

---

19. A special deck of cards consists of 5 red cards, 20 blue cards, and 25 green cards. Svetlana selects 1 card from the special deck 500 times. How many times can she expect to draw a red card?

---