

Name _____ Date _____

Diagnostic Test

Directions: Circle the best answer for each of the following questions.

Use this information to answer questions 1 and 2.

A bag contains 9 blue marbles and 15 red marbles.

1. What is the ratio of blue marbles to red marbles in simplest form?

- A. 3:8
- B. 3:5
- C. 8:3
- D. 5:3

2. What is the ratio of red marbles to total marbles in simplest form?

- A. 3:5
- B. 8:5
- C. 5:3
- D. 5:8

3. In a zoo, the ratio of marsupials to mammals is 5:27. If there are 15 marsupials in the zoo, how many mammals are there?

- A. 32 mammals
- B. 81 mammals
- C. 135 mammals
- D. 243 mammals

4. A light flashes 1,800 in 45 minutes. What is the rate of flashing in flashes per minute?

- A. 20 flashes per minute
- B. 30 flashes per minute
- C. 40 flashes per minute
- D. 50 flashes per minute

5. Elias purchased a shirt during a 25% off sale. If the regular price was \$38, how much did he pay?

- A. \$9.50
- B. \$28.50
- C. \$37.25
- D. \$38.25

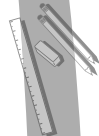
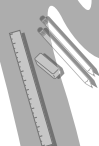
6. 30% of the cars sold at a dealership were black. If the dealership sold 150 cars, how many were black?

- A. 30 cars
- B. 45 cars
- C. 120 cars
- D. 105 cars



Diagnostic Test (cont.)

7. Javier bought a bicycle at a 20% off sale. If the regular price of the bicycle was \$260, how much did he pay for the bicycle?
- A. \$52
B. \$208
C. \$234
D. \$240
8. Josh works at a lumber store. In one day, he sold $5\frac{5}{8}$ metres, $6\frac{1}{2}$ metres, and $\frac{1}{4}$ of a metre of lumber. How many metres of lumber did he sell in all?
- A. $11\frac{3}{8}$ metres
B. $11\frac{8}{11}$ metres
C. $12\frac{3}{8}$ metres
D. $5\frac{1}{8}$ metres
9. Maria jogs $3\frac{1}{3}$ kilometres each day. How far would she run if she ran her route $2\frac{1}{2}$ times?
- A. $1\frac{4}{15}$ kilometres
B. $5\frac{5}{6}$ kilometres
C. $6\frac{1}{6}$ kilometres
D. $8\frac{1}{3}$ kilometres
10. A group of people won \$5,082 in a contest. If each person received \$145.20, how many people were in the group?
- A. 35 people
B. 70 people
C. 350 people
D. 250 people
11. Evaluate the expression $500 - 3x$ if $x = 15$.
- A. 185
B. 455
C. 5,000
D. 7,455
12. Evaluate the expression $4(3m + 5m)$ if $m = 2$.
- A. 44
B. 64
C. 240
D. 464



Diagnostic Test (cont.)

13. Express $10r + 3 + 8r$ in simplest form.
- A. $10 + 11r$
 - B. $10r + 11$
 - C. $18r + 3$
 - D. $21r$
14. Evaluate 2^5 .
- A. 7
 - B. 10
 - C. 16
 - D. 32
15. Evaluate $2 \cdot 3^4$.
- A. 24
 - B. 48
 - C. 162
 - D. 1,296
16. The number of squares is 40 greater than the number of circles. Which equation represents this relationship?
- A. $s = c + 40$
 - B. $s = c - 40$
 - C. $s = 40 - c$
 - D. $s = 40c$
17. The equation $d = 5p$ describes the relationship between the number of pennies and dimes. Which statement is true?
- A. There are 5 times as many pennies as dimes.
 - B. There are 5 times as many dimes as pennies.
 - C. There are 5 more pennies than dimes.
 - D. There are 5 more dimes than pennies.
18. For which equation is 5 the solution?
- A. $x - 1 = 3$
 - B. $20 - m = 7$
 - C. $25 = r + 20$
 - D. $24 - n = 11$
19. For which equation is 4 the solution?
- A. $5b = 20$
 - B. $20t = 5$
 - C. $21z = 17$
 - D. $14q = 18$



Diagnostic Test *(cont.)*

20. Which number is not a solution to the inequality $3x \leq 15$?

- A. 3
- B. 4
- C. 5
- D. 6

Use this information to solve questions 21 and 22.

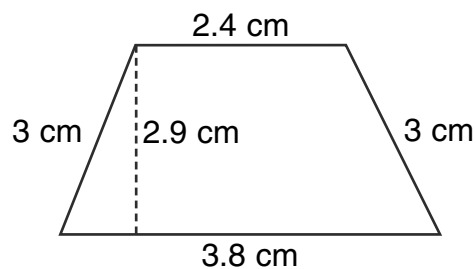
A basketball rim has a radius of 23 cm

21. What is the area inside the rim? Use 3.14 for the value of π . Round your answer to the nearest tenth.

- A. 144.4 cm^2
- B. 529 cm^2
- C. 72.2 cm^2
- D. 1661 cm^2

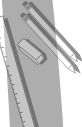
22. What is the circumference of the basketball rim?

- A. 72.3 cm
- B. 144.5 cm
- C. 415.5 cm
- D. 1661.9 cm



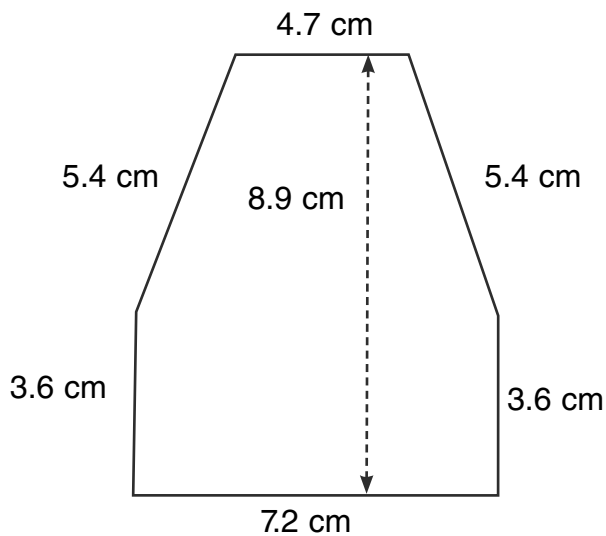
23. What is the area of the trapezoid?

- A. 6.96 cm^2
- B. 8.99 cm^2
- C. 9.3 cm^2
- D. 11.4 cm^2



Diagnostic Test *(cont.)*

Use the figure to answer questions 24 and 25.



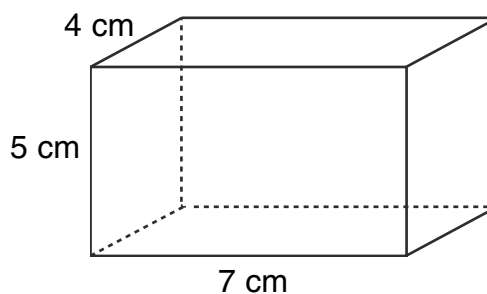
24. Find the perimeter of the figure.

- A. 29.9 cm
- B. 45.2 cm
- C. 48.8 cm
- D. 52.4 cm

25. Find the area of the figure.

- A. 42.3 cm^2
- B. 57.5 cm^2
- C. 58.1 cm^2
- D. 78.9 cm^2

Use the figure to answer questions 26 and 27.



26. Find the volume of the rectangular prism.

- A. 16 cm^3
- B. 55 cm^3
- C. 70 cm^3
- D. 140 cm^3

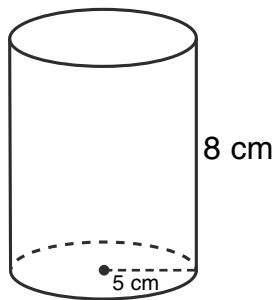
27. Find the surface area of the rectangular prism.

- A. 32 cm^2
- B. 64 cm^2
- C. 83 cm^2
- D. 166 cm^2



Diagnostic Test *(cont.)*

Use the figure to answer questions 28 and 29.



28. Find the volume of the cylinder.
- 80 cm^3
 - 251.3 cm^3
 - 628 cm^3
 - $1,004.8 \text{ cm}^3$
29. Find the surface area of the cylinder.
- 251.3 cm^2
 - 408.2 cm^2
 - 628.3 cm^2
 - 653.5 cm^2
30. A rectangular prism has a volume of 540 cm^3 . Its length is 12 cm and its height is 9 cm. What is its width?
- 4 cm
 - 5 cm
 - 12.2 cm
 - 25.7 cm
31. What is the mean of the data set: 12, 8, 15, 8, 16, 9, 24, 16, 8, 40?
- 10
 - 12.5
 - 15.6
 - 19.5
32. What is the median of the data set: 7, 9, 2, 11, 12, 3, 12, 14, 1?
- 9
 - 8
 - 12
 - 10



Diagnostic Test *(cont.)*

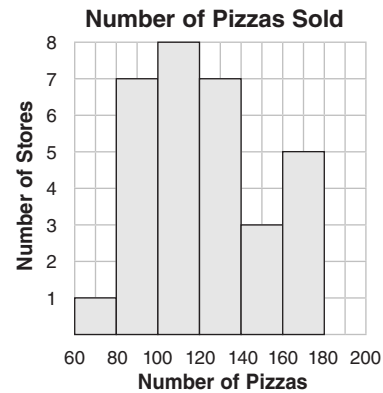
33. What is the range of the data set:
120, 50, 72, 116, 75, 40, 72, 90, 40,
100?
- A. 20
B. 62.5
C. 80
D. 108

Use the box plot to answer questions
34 and 35.



34. What is the median of the data shown on the box plot?
- A. 80
B. 100
C. 120
D. 145
35. What are the lower and upper quartiles on the box plot?
- A. 120 and 145
B. 100 and 120
C. 100 and 180
D. 100 and 145

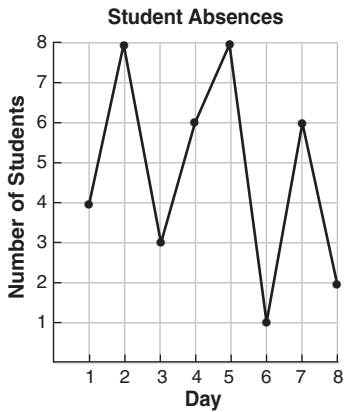
Use the graph to answer questions
36 and 37.



36. What interval was chosen for the graph?
- A. 10 B. 20
C. 40 D. 50
37. How many stores reported selling between 100 and 120 pizzas?
- A. 7 stores B. 8 stores
C. 10 stores D. 15 stores

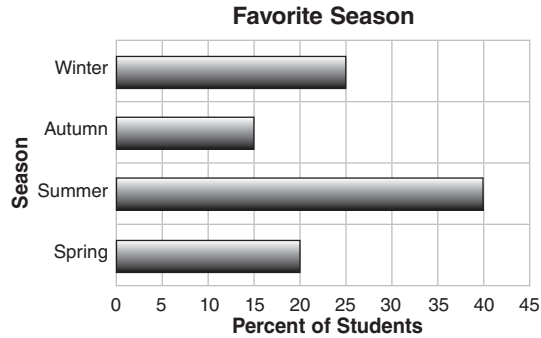


Diagnostic Test (cont.)



38. How many students were absent on day 6?
- A. 1
 - B. 3
 - C. 4
 - D. 8

Use the bar graph for questions 39 and 40.



39. What percent of students prefer spring?
- A. 15%
 - B. 20%
 - C. 25%
 - D. 40%
40. Choose the true statement.
- A. The percent of students who like winter and spring combined is the same as the percent who like summer.
 - B. The percent of students who like spring and autumn combined is greater than the percent who like summer.
 - C. The percent of students who like spring is half as much as the percent who like summer.
 - D. The percent of students who like spring is twice as much as the percent who like summer.

