Measurement

1. What will it cost to carpet a room with indoor/outdoor carpet if the room is 10 feet wide and 12 feet long? The carpet costs 12.51 per square yard.

$166.80

$175.90

$184.30

$189.90

$192.20

2. If the perimeter of a rectangular house is 44 yards, and the length is 36 feet, what is the width of the house?
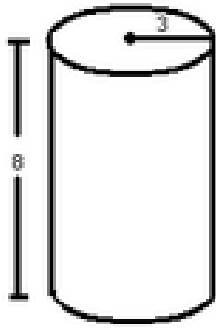
10 yards

18 yards

28 feet

32 feet

36 yards

3. What is the volume of the following cylinder?

210.91

226.20

75.36

904.32

28.26

4. What is the volume of a cube whose width is 5 inches?

15 cubic inches

25 cubic inches

64 cubic inches

100 cubic inches

125 cubic inches

5. Sally has three pieces of material. The first piece is 1 yd. 2 ft. 6 in. long, the second piece is 2 yd. 1 ft. 5 in long, and the third piece is 4 yd. 2ft. 8in long. How much material does Sally have?

7 yd. 1 ft. 8 in.

8 yd. 4 ft. 4 in.

8 yd. 11 in.

9 yd. 7 in.

10 yd.

6. A can's diameter is 3 inches, and its height is 8 inches. What is the volume of the can?

50.30

56.55

75.68

113.04

226.08

7. If the area of a square flowerbed is 16 square feet, then how many feet is the perimeter of the flowerbed?

4

12

16

20

24

8. Of the following units which would be more likely used to measure the amount of water in a bathtub?

kilograms

liters

milliliters

centigrams

volts

9. If a match box is 0.17 feet long, what is its length in inches the most closely comparable to the following?

5 1/16 inch highlighter

3 1/8 inch jewelry box

2 3/4 inch lipstick

2 3/16 inch staple remover

4 1/2 inch calculator

10. What is the cost in dollars to steam clean a room W yards wide and L yards long it the steam cleaners charge 10 cents per square foot?

0.9WL

0.3WL

0.1WL

9WL

3WL

11. One inch equals 2.54 cm, How many centimeters tall is a 76 inch man?

20 cm

29.92 cm

193.04 cm

300.04 cm

593.04 cm

12. A room measures 11 ft x 12 ft x 9 ft. What is the volume?

4

1188 ft3

32 ft3

120 ft3

1300 ft3

1350 ft3

13. A vitamin's expiration date has passed. It was supposed to contain 500 mg of Calcium, but it has lost 325 mg of Calcium. How many mg of Calcium are left?

135 mg

175 mg

185 mg

200 mg

220 mg

14. You have orders to give a patient 20 mg of a certain medication. The medication is stored 4 mg per 5-mL dose. How many milliliters will need to be given?

15 mL

20 mL

25 mL

30 mL

35 mL

15. You need exactly a 1680 ft3 aquarium for your fish. At the pet store you see four choices of aquariums, but the volume is not listed. The length, width, and height are listed on the box. Which of the following aquariums would fit your needs?

12 ft x 12 ft x 12 ft

13 ft x 15 ft x 16 ft

14 ft x 20 ft x 6 ft

15 ft x 16 ft x 12 ft

15 ft x 12 ft x 12 ft

16. One slice of bread is 80 calorie. Approximately how many calories are in 2 ½ slices of bread?

140 calories

200 calories

220 calories

240 calories

260 calories

Answers & Explanations

1. A: The area of the room is equal to the product of 10 ft and 12 ft, or 120 ft'. 120 ft' = 13.3 yd', so the total cost is equal to the product of the area of the room, or 13.3 yd' and $12.51 (the cost per square yard). It will cost $166.80 to carpet the room.

2. A: The perimeter of the house is equal to 132 feet, since there are 3 feet in 1 yard. The perimeter of the house may be represented by the equation, 2l + 2w = 132. Substituting 36 for l gives 2(36) + 2w = 132. Solving for w gives w = 30, which is measured in feet. 30 feet = 10 yards, so the width of the house is also equal to 10 yards.

3. B: The volume of a cylinder is represented by the equation, $V=\pi r^2 h$, where r represents the radius and h represents the height. Substituting 3 for r and 8 for h gives $V=\pi(3)^2 (8)$, or $V = 72\pi$. Thus, the volume is approximately 226.2 cubic units.

4. E: The volume of a cube is represented by the equation, $V=s^3$, where s represents one side length. Substituting 5 for s gives $V=5^3$, or $V = 125$. The volume of the cube is 125 cubic inches.

5. D: The sum of the material is equal to 7 yd, 5 ft, 19 in, which may also be written as 7 yd, 6 ft, 7 in, or 9 ft, 7 in.

6. B: The volume of a cylinder is represented by the equation, $V=\pi r^2 h$, where r represents the radius and h represents the height. Substituting 1.5 for r and 8 for h gives $V=\pi(1.5)^2(8)$, or $V = 18\pi$. Thus, the volume is approximately 56.55 cubic inches.

7. C: The area of a square is represented by the formula, $A=s^2$. Substituting 16 for A gives: $16=s^2$. Solving for s shows each side length to be 4 feet. Thus, the perimeter is equal to the product of 4 and 4 ft, or 16 ft.

8. B: Liters measure capacity and are appropriate for the size of a bathtub. Milliliters are also a measurement of capacity, but are too small a measurement for such a large container.

9. D: A length of 0.17 feet is equal to 2.04 inches. The following proportion may be used to determine the length, in inches: $0.17/x=1/12$. A length of 2.1875 inches is the closest to this measurement.

10. A: The area may be represented as $A = WL$, measured in yards, or $A = 9WL$, measured in feet. Thus, the charge is equal to the product of 9WL and 0.10 or 0.9WL.

11. C: The following proportion may be used to find the measurement, in centimeters: $1/2.54=76/x$. Solving for x gives $x = 193.04$. The man is 193.04 cm tall.

12. A: The volume of a rectangular prism is equal to the product of the length, width, and height. Thus, the volume of the room may be represented as $V=11 \cdot 12 \cdot 9$, which equals 1188 ft".

13. B: The number of mg left is equal to the difference of 500 mg and 325 mg, or 175 mg.

14. C: The following proportion may be used to find the number of mL to be given: 4/5=20/x. Solving for x gives x = 25. Thus, 25 mL need to be given.

15. C: The product of these dimensions is 1,680 ft" (14 ft x 20 ft x 6 ft), thus this aquarium meets the required volume.

16. B: The following proportion may be used to find the number of calories in 2 1/2 slices of bread: 1/80=(2 1/2)/x. Solving for x gives x = 200. There are 200 calories in 2 1/2 slices of bread.

Additional Measurement

1. A recipe that serves 2 people calls for 1.5 teaspoons of salt. How much salt should be added if the recipe is altered to serve 5?

1 3/4teaspoons

2 teaspoons

2 1/2teaspoons

3 teaspoons

3 3/4 teaspoons

2. There are 80 mg per 0.8 mL in Acetaminophen Concentrated Infant Drops. If the proper dosage for a four year old child is 240 mg, how many milliliters should the child receive?

0.8 mL

1.6 mL

2.4 mL

3.2 mL

5.2 mL

3. On a highway map, the scale indicates that 1 inch represents 45 miles. If the distance on the map is 3.2 inches, how far is the actual distance?

45 miles

54 miles

9

112 miles

144 miles

168 miles

4. Select the meaning of the underlined word in this sentence:

Despite an increase in the volume of his urine, the patient still reported bloating.

quality

length

quantity

loudness

Question 5 is based upon the following table:

English-Metric Equivalents	
1 meter	1.094 yard
2.54 centimeter	1 inch
1 kilogram	2.205 pound
1 liter	1.06 quart

5. A sailboat is 19 meters long. What is its length in inches?

254

1,094

4,826

748

6. Candice is reading a map. She measures a distance along a road as 6.5 inches. If the scale of the map is such that one mile is represented as 2 inches, what is the real distance along the road that Candice has measured?

6.5 miles

3.25 miles

10 miles

13 miles

7. Archie's gas tank is 1/3 full. If Archie adds 3 gallons of gas to the tank, it will be 1/2 full. What is the capacity in gallons of Archie's tank?

28

12

20

16

18

8. How many 3-inch segments can a line that is 4.5 yards long be divided into?

15

45

54

64

84

9. A circle has a perimeter of 35 feet. What is its diameter?

11.14 feet

6.28 feet

5.57 feet

3.5 feet

10. The following table shows the distance from a point to a moving car at various times.

d Distance	50	70	110
r Time	2	3	5

If the speed of the car is constant, which of the following equations describes the distance from the point to the car?

d = 25 t

d = 35 t

d = 55 t

d = 20 t +10

None of these

11. Jamie eats 4 bagels a day. If a bagel weighs 8 ounces, how many pounds of bagels does Jamie eat per week?

2 pounds

12 pounds, 8 ounces

14 pounds

17 pounds, 9 ounces

12. Peggy needs to ship two packages. The first package weighs pounds 16 1/4, and the second package weighs 23 3/8 pounds. What is the total weight of the packages that Peggy needs to ship?

38 8/9 pounds

39 5/8 pounds

40 pounds

40 5/8 pounds

13. How many seconds are there in 36 hours?

2,160

51,840

129,600

132,200

Answers and Explanations

1. E: You could set up a proportion as follows to solve for , the amount of salt for 5 people: (2 people)/(1.5 tsp)=(5 people)/(x tsp)

By cross-multiplying 2x=5*1.5,or 2x=7.5 . Dividing by 2 gives an answer of x=3.75 or 3 3/4.

2. C: Divide the number of milligrams the child should receive by the number of milligrams in 0.8 mL doses to determine how many 0.8 mL doses the child should receive: 240/80 = 3. Multiply the number of doses by 0.8 to determine how many milliliters the child should receive: 3(0.8) = 2.4 mL.

3. D: Use the following proportion: (1 inch)/(45 miles)=(3.2 inches)/(x miles)

Cross multiply: x = (45)(3.2) = 144.

4. C: The word volume as it is used in this sentence means 'quantity.' Doctors will refer to an increase in the volume of urine or some other body product as an indication of health. Volume is calculated as length width height (or depth); it is a three-dimensional measure.

5. D: To solve this problem, convert meters to centimeters and then use the conversion factor in the table to convert centimeters to inches.

Recall that there are 100 centimeters in a meter (centi means 'hundredth'). Therefore,19 m=1900 cm=1900/2.54=748 inches.

6. B: Since each mile is equivalent to 2 inches, then 6.5 inches is equivalent to 6.5/2=3.25 miles.

7. E: This problem can be solved with the following equation, in which x equals the total capacity of the tank: 1/2 x=1/3 x+3. Subtracting 1/3 x from both sides gives the equation 1/6 x=3 Multiplying both sides by 6 gives the final answer: x=18

8. C: There are 12 inches in a foot and 3 feet in a yard. Therefore, four and a half yards is equal to 4.5*3*12 = 162 inches. To determine the number of 3-inch segments, divide 162 by 3.

9. A: The perimeter, or circumference C, of a circle is given by C = 2πr, where r is the radius. Since C = 35, r=35/2π=5.57, and we double this value to obtain the diameter: d = 11.14 feet.

Note that Answer C is the radius, not the diameter.

10. D: Inspection of the data shows that the distance traveled by the car during any 1-unit interval of time (velocity) is 20 units. So, assuming the car had no head start before time measurement began, we have distance = velocity*time, or d=20t However, the first data point shows that the car is 50 units from the point of origin at time 2, so it had a 10-unit head start before time measurement began. Hence, the final equation is d=20t+10

11. C: First, calculate the total number of ounces of bagels Jamie eats per day:

4 bagels x 8 ounces = 32 ounces of bagels a day.

Next, convert ounces to pounds. There are 16 ounces to 1 pound:

32 ounces / 16 ounces = 2 pounds. So, Jamie eats 2 pounds of bagels a day.

This question is asking for the total number of pounds eaten each week:

2 pounds x 7 days = 14 pounds per week, Choice C.

12. B: To add two fractional amounts, each fraction must have the same denominator. Find the least common multiple of the denominators and convert the fractions:

16 1/4 = 16 2/8

Then add the numbers:

16 2/8 + 23 3/8 = 39 5/8 pounds, Choice B.

13. C: Convert the units from hours to seconds:

36 hours 8 60 minutes/hour * 60 seconds/minute = 129,600, Choice C.