

Calculators were not permitted for this test. All work had to be done in booklet.

- 1) You are shown four proportions and are asked to select the one that is correct. In a correct proportion, the product of the means will equal the product of the extremes. This means when you cross multiply, the products will equal each other. Choice C is therefore correct.
 Another way of doing this problem is to notice that both fractions are equivalent. 20/25 can be reduced to 4/5 when the numerator and denominator are divided by 5.

$$\frac{4}{5} \times \frac{20}{25} \quad 4 \times 25 = 5 \times 20$$

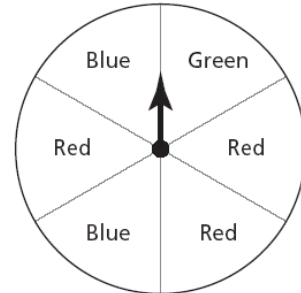
ANSWER: (C)

- 2) Shirley's wading pool holds 368 quarts of water. How many gallons of water does it hold? You are given the information that 1 gallon equals 4 quarts. What you have to now do in order to find your answer is to calculate how many 4's there are in 368, since each 4 quarts equal 1 gallon.
 Choice A is your answer.

$$\begin{array}{r} 92 \\ 4 \overline{)368} \\ \underline{36} \\ 08 \\ \underline{8} \\ 0 \end{array}$$

ANSWER: (A)

- 3) You are presented with the spinner at the right. What is the probability the arrow will land on a green? The spinner is divided into 6 equal sections. 1 of these sections is green. The probability that the arrow will land on a green is therefore 1/6.



ANSWER: (D)

- 4) Gabe invited 4 girls and 7 boys to a party. Each of Gabe's guests received a certain number of candy bars, c . Which expression represents the total number of candy bars given to Gabe's guests?
 There are a total of 11 guests-- 4 girls plus 7 boys. Each one will receive c candy bars. The total number will equal 11 times c , or $11c$.

ANSWER: (A)

- 5) This problem is similar to problem number 1. You are presented with the proportion at the right and asked to determine the value of x . As in problem 1, the products obtained when cross multiplying have to be equal. In other words, the result obtained for 9×9 has to equal the result obtained when multiplying 27 by x .
 9×9 is 81. 27 times what is 81? 81 divided by 27 is 3. Therefore $x = 3$. $27 \times 3 = 81$.

ANSWER: (B)

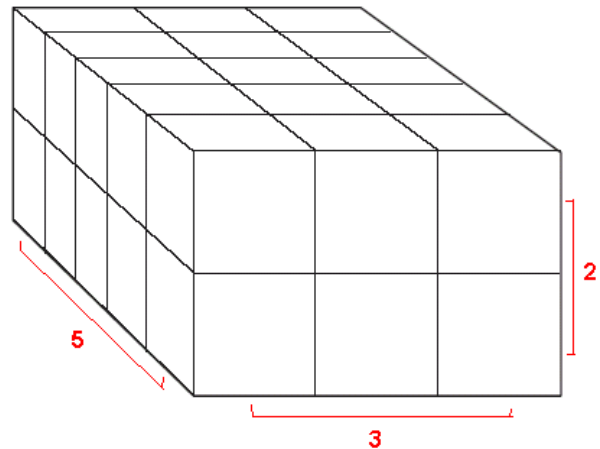
- 6) You are presented with the table at the right.
You are asked: What is the ratio of the number of red crayons compared to the number of yellow crayons?
There are **3 red** crayons and **1 yellow** crayon.
The ratio of red crayons to yellow crayons is 3 to 1, or **3 : 1**

CHEN'S CRAYONS

Color	Number of Crayons
Blue	2
Red	3
Yellow	1
Green	4

ANSWER: (B)

- 7) You are asked to determine the volume of the rectangular prism at the right. The volume of a rectangular prism is the product of its length, width, and height. I have indicated in red the length, width and height of this particular rectangular prism.
Its volume will equal $5 \times 3 \times 2$, or 30 cubic inches.



ANSWER: (C)

- 8) You are shown the following: $4 \times (8 \times 6) = (4 \times 8) \times 6$
It is an example of the associative law of multiplication.
On the left side of the equation the 8 and 6 are associated with each other, while on the right side, the 4 and 8 are associated. Notice that the order of the numbers remain the same.

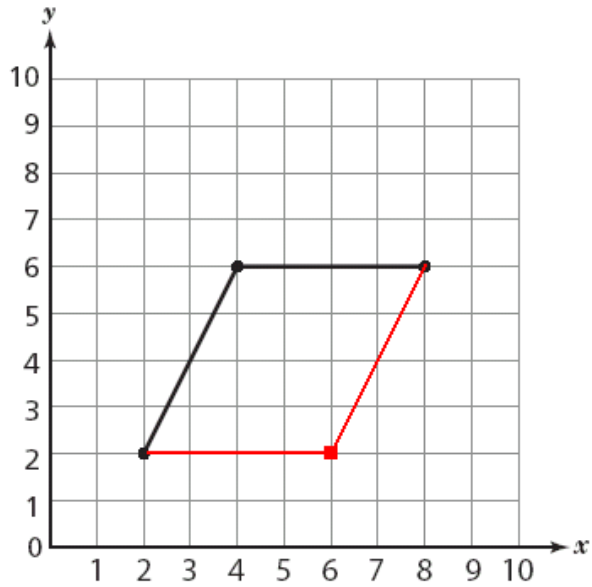
ANSWER: (C)

- 9) You are told that there are 80 sixth-grade students in a school, and that 25% of them have green eyes. How many of them have green eyes?
There are a number of ways to do this problem. Here are three ways
Method 1: Find 25% of 80. You know that 25% is $\frac{1}{4}$, so find $\frac{1}{4}$ of 80. 80 divided by 4 is 20. This means that $\frac{1}{4}$ of 80, or 25% of 80 equals **20**.
Method 2: Find 25% of 80 by multiplying $80 \times .25$. (.25 is the decimal equivalent of 25%). $80 \times .25 = 20$
Method 3: Set up a proportion and solve for the unknown.
 $\frac{25}{100} = \frac{X}{80}$ As in problems 1 and 5, cross multiply. $25 \times 80 = 100$ times what?

$$25 \times 80 = 2000, \quad 100 \text{ times what equals } 2000? \quad 20$$

ANSWER: (B)

- 10) You are presented with the grid at the right, excluding the two red lines and the red point. You are asked for the coordinates of the point required to complete a parallelogram. A parallelogram is a quadrilateral (four sided figure) whose opposite sides are parallel. Of the given choices, only the point **(6,2)** as shown at the right is the correct point. Keep in mind that when naming points on a grid, the first number represents the x-coordinate, while the second number represents the y-coordinate.



ANSWER: (B)

- 11) Students in a sixth-grade class completed a survey as to their favorite foods. $\frac{2}{6}$ chose hamburgers, and $\frac{3}{8}$ chose pizza. You are asked: What fraction of the class chose either hamburgers or pizza as their favorite food? In essence you are being asked to add the two fractions. Step number 1 will require finding a common denominator. You can use 24, as both 6 and 8 are factors of 24.

$$\begin{array}{r}
 \frac{2}{6} \text{ (multiply numerator and denominator by 4)} = \frac{8}{24} \\
 + \\
 \frac{3}{8} \text{ (multiply numerator and denominator by 3)} = \frac{9}{24} \\
 \hline
 \frac{17}{24}
 \end{array}$$

ANSWER: (D)

ANSWERS CONTINUE ON NEXT PAGE...

- 12) You are presented with the table shown at the right and asked to find the median length. The median length will be the middle length when the lengths are put in order.
 Let us put them in order:
 6, 8, 8, 10, 16, 16, 20
 There are seven items.
 $7 + 1 = 8$, and half of 8 is 4. The 4th item will be the median or middle length.
 The fourth length is **10**, and the median.

BEETLE LENGTHS

Beetle Name	Length
Bacon beetle	8 mm
Green tiger beetle	16 mm
Ground beetle	16 mm
Rove beetle	8 mm
Soldier beetle	10 mm
Maritime beetle	20 mm
Green dock leaf beetle	6 mm

ANSWER: (B)

- 13) You are told that Kathy bought 6 cups of ice cream. You are asked how many pints is that? You are told that 1 pint equals 2 cups.
 Since each 2 cups equal 1 pint and she has 6 cups, she needs to figure out how many 2's there are in 6. 6 divided by 2 is 3. The answer is **3 pints**.

ANSWER: (A)

- 14) You are asked for the range of a given set of data. The range will be the difference between the highest item and lowest. The greatest item given is 72. The lowest is 12.
 $72 - 12 = 60$ **The range is 60.**

ANSWER: (A)

- 15) You are asked for the decimal equivalent of $1/5$. You can convert each decimal to a fraction and see that 0.2 equals $2/10$ which equals $1/5$.

Alternate method: A fraction can be converted to a decimal by dividing the numerator by the denominator. In our case, that would be 1 divided by 5.

$$\begin{array}{r} .2 \\ 5 \overline{)1.0} \end{array}$$

ANSWER: (C)

- 16) If you know the number of eggs laid each week and want to determine how many eggs were laid for a specific number of weeks, simply multiply the number of eggs by the number of weeks. In our case that would be $5.5 \times w$.

ANSWER: (D)

- 17) You are given the length of five nails and are told to put them in order from shortest to longest. To make this task easier, first rewrite the lengths using common denominators.

$$2\frac{1}{2} = 2\frac{2}{4}, \quad 2\frac{3}{4}, \quad \frac{3}{4}, \quad 3\frac{1}{2} = 3\frac{2}{4}, \quad 2\frac{1}{4}$$

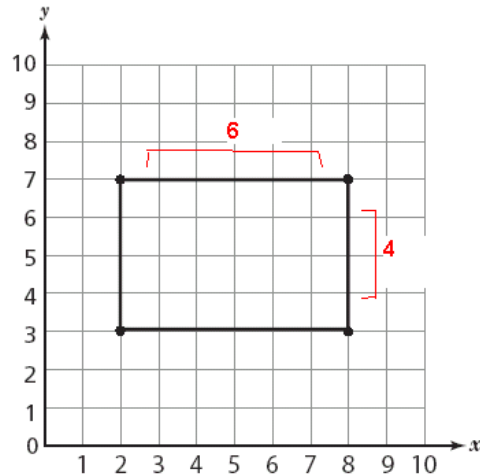
Now you can see that from shortest to longest the lengths would be: $\frac{3}{4}, 2\frac{1}{4}, 2\frac{2}{4}, 2\frac{3}{4}, 3\frac{2}{4}$

Using the lengths with the original denominators this would be:

$$\frac{3}{4} \quad 2\frac{1}{4} \quad 2\frac{1}{2} \quad 2\frac{3}{4} \quad 3\frac{1}{2}$$

ANSWER: (B)

- 18) The perimeter of an object is found by finding the sum of all of its sides. In the case at the right find the length of **all** sides and calculate their sum.
 $6 + 6 + 4 + 4 = 20$
 Remember: Opposite sides of a rectangle are equal in length.



ANSWER: (C)

- 19) You are given the formula used to find the volume of a cylinder: $V = \pi r^2 h$
 You are told that a particular barrel shaped as a cylinder has a **radius of 1 foot, and a height of 4 feet**. You are asked to determine its volume in terms of pi.

To solve this problem requires simple substitution.
 Using the formula, you know that $r=1$ and $h=4$

$$\begin{aligned} V &= \pi r^2 h && \text{Substitute the values for } r \text{ and } h. \\ V &= \pi (1)^2 (4) && \text{Simplify} \\ V &= \pi (1)(4) && \text{Multiply} \\ V &= 4 \pi \end{aligned}$$

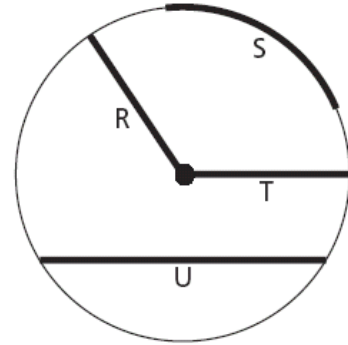
ANSWER: (A)

- 20) Which expression is equivalent to $|-11| + |-3|$?
 The two vertical bars indicate the absolute value of what is contained between them.
 The absolute value of -11 is 11, and the absolute value of -3 is 3. The above problem is therefore equivalent to $11 + 3$.

ANSWER: (A)

- 21) You are presented with the circle at the right. You are given four choices and asked which one identifies segment U.

Segment U happens to be a **chord**. A chord is a line segment that joins two points on the circumference of a circle. S happens to be an arc, R is a radius, and T is a radius as well. There is no diameter pictured. A diameter is a chord that goes through the center of a circle.



ANSWER: (B)

- 22) You are asked to simplify $4^3 \times 3^2$
 $4^3 = 4 \times 4 \times 4 = 64$
 $3^2 = 3 \times 3 = 9$

$$4^3 \times 3^2 = 64 \times 9 = 576$$

ANSWER: (D)

- 23) You are given the following information: 1 liter = 1,000 milliliters
 You are told that a container contains 255 milliliters of salt water. How many liters is that?
 Set up a proportion and solve for the unknown.

$$\frac{\text{liters}}{\text{milliliters}} \quad \frac{1}{1000} = \frac{x}{255} \quad \text{cross multiply}$$

$$1000x = 255 \quad \text{divide 255 by 1000}$$

$$x = \frac{255}{1000} \quad \text{converted to a decimal this is .255}$$

ANSWER: (A)

(Also note that 255 is less than 1000 so there is less than 1 liter of salt water. Choice A is the only answer less than 1.)

- 24) Simplify: $6 \times (5^3 + 2)$

Use the order of operations.

Parenthesis comes first. Within the parenthesis above there is an exponent which is done first. $5^3 = 5 \times 5 \times 5 = 125$

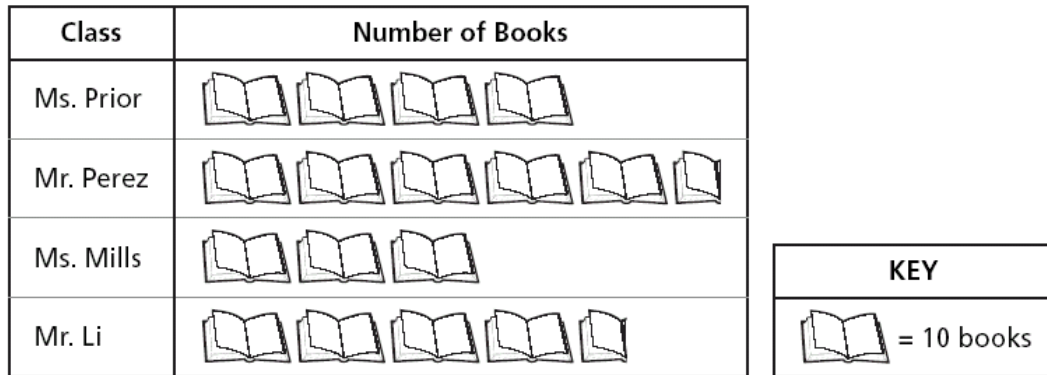
$$\begin{array}{ll} 6 \times (5^3 + 2) & \text{Calculate } 5^3 \\ 6 \times (125 + 2) & \text{Calculate what is in the parenthesis.} \\ 6 \times 127 & \text{Multiply} \end{array}$$

$$\begin{array}{r} 14 \\ 127 \\ \times 6 \\ \hline 762 \end{array}$$

ANSWER: (A)

25) You are presented with the pictograph shown below.

READING TOTALS



You are asked to determine how many more books did the students in Mr. Perez's class read than the students in Ms. Mills's class.

Looking at the line for Mr. Perez you see that there are 2 and 1/2 more books than pictured for Ms. Mills. Each picture of a book represents 10 books. Therefore 2 books represent 20 books, and 1/2 of a book represents 5 books. This is a total of $20 + 5$, or **25 books**.

ANSWER: (C)