

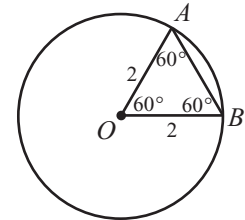
Question 1 Test 1, First QR Section**O is the center of the circle....****QA: The circumference QB: 12***Geometry: Circles*Answer: *Quantity A is greater*

1. In order to find the circumference of the circle, we need the radius (Circumference = $2\pi r$).

Both \overline{OA} and \overline{OB} are radii of the circle.

2. Triangle OAB is an equilateral triangle:

$$\begin{aligned} \text{If } \angle O \text{ is } 60^\circ, \text{ then } \angle A + \angle B = 120^\circ, \text{ because } \angle O + \angle A + \angle B = 180^\circ \\ 60^\circ + \angle A + \angle B = 180^\circ \\ \angle A + \angle B = 120^\circ \end{aligned}$$



$\angle A$ and $\angle B$ are equal because triangles that have two vertices on the circle and one at the center of the circle are always isosceles triangle. So $120^\circ \div 2 = 60^\circ$.

Thus, $\angle O$ is 60° , $\angle A$ is 60° , and $\angle B$ is 60° . Triangle OAB is an equilateral triangle.

3. The perimeter of triangle ΔOAB is 6. Because each side of an equilateral triangle is of equal length, both \overline{OA} and $\overline{OB} = 2$ (length of $6 \div 3$ sides = length of 2).

4. Now find the circumference:

$$C = 2\pi r \rightarrow C = 2\pi 2 \rightarrow C = 4\pi \rightarrow C = 4 \times (3.14) \rightarrow C = 12.56$$

5. Compare the quantities:

Quantity A: 12.56

Quantity B: 12

Question 2 Test 1, First QR Section**A certain recipe requires $3/2$ cups of...****QA: Sugar required for 30 cookies QB: 2 cups***Arithmetic: Proportions*Answer: *Quantity B is greater*

1. Set up a cross-multiplying diagram and complete it with the information provided:

$$\begin{array}{r} \text{Cups of sugar:} \quad \frac{3/2}{24} = \frac{x}{30} \\ \text{Cookies:} \end{array}$$

2. Solve for x :

$$\frac{3/2}{24} = \frac{x}{30} \rightarrow (3/2)(30) = (24)(x) \rightarrow 45 = 24x \rightarrow 1.875 = x$$

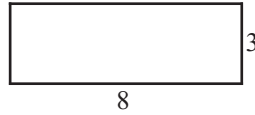
3. Compare the quantities:

Quantity A: 1.875 cups

Quantity B: 2 cups

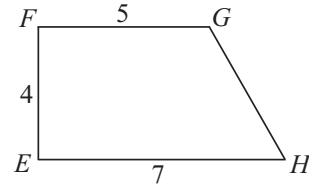
Question 3 Test 1, First QR Section**QA: The area of $ABCD$ QB: The area of $EFGH$** *Geometry: Quadrilaterals**Answer: The two quantities are equal*

1. Find the area of rectangle
- $ABCD$
- :



$$\text{Area} = \ell \times w \rightarrow \text{Area} = 8 \times 3 \rightarrow \text{Area} = 24$$

2. Find the area of trapezoid
- $EFGH$
- :



$$\text{Area} = \frac{b_1 + b_2}{2}(h) \rightarrow \text{Area} = \frac{5 + 7}{2}(4) \rightarrow \text{Area} = \frac{12}{2}(4) \rightarrow \text{Area} = (6)(4) \rightarrow \text{Area} = 24$$

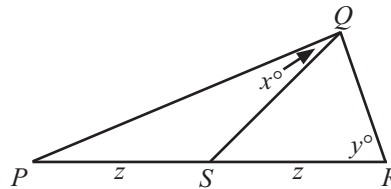
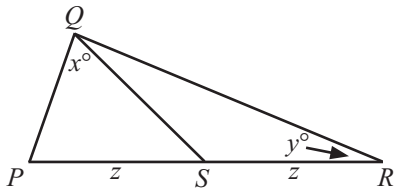
3. Compare the quantities:

Quantity A: 24

Quantity B: 24

Question 4 Test 1, First QR Section**Triangle PQR in which $PS = SR$** **QA: x QB: y** *Geometry: Triangles**Answer: The relationship cannot be determined*

- According to the current diagram, y° is larger than x° . But remember, the figures are not always drawn to scale and you are free to make changes provided you keep the information given as a constant. In this case, the constant is that $PS = SR$.
- So keeping line PR the same, where $PS = SR$, move Q around to see what happens to x and y :



- As you can see, it's impossible to determine which angle is greater without having more information about point Q .

Question 5 Test 1, First QR Section

$6 < x < 7 \quad y = 8$

QA: x/y QB: 0.85*Arithmetic: Fractions**Answer: The relationship cannot be determined*

1. SUPPLY two numbers for x , one at the low end of its range and one at the high end of its range.

$$x = 6.1 \text{ and } x = 6.9$$

2. Now determine the value of $\frac{x}{y}$ with these two values of x :

$$\frac{x}{y} = \frac{6.1}{8} = 0.7625 \quad \text{and} \quad \frac{x}{y} = \frac{6.9}{8} = 0.862$$

3. This demonstrates that the fraction (x/y) can be greater than 0.85 or less than 0.85. It is impossible to determine with the information provided.

Question 6 Test 1, First QR Section**The average of 100 measurements is 23.....****QA: Average of 150 measurements QB: 25***Statistics: Average**Answer: Quantity B is greater*

1. When the average of 100 measurements is 23, find the sum:

$$\frac{\text{sum}}{\# \text{ of \#s}} = \text{average} \quad \rightarrow \quad \frac{\text{sum}_1}{100} = 23 \quad \rightarrow \quad \text{sum}_1 = 2300$$

2. When the average of 50 measurements is 27, find the sum:

$$\frac{\text{sum}}{\# \text{ of \#s}} = \text{average} \quad \rightarrow \quad \frac{\text{sum}_2}{50} = 27 \quad \rightarrow \quad \text{sum}_2 = 1350$$

3. Now find the average of the two groups together:

$$\frac{\text{sum}_1 + \text{sum}_2}{100 + 50} = \text{combined average} \quad \rightarrow \quad \frac{2300 + 1350}{100 + 50} = \text{combined average} \quad \rightarrow$$

$$\frac{3650}{150} = \text{combined average} \quad \rightarrow \quad 24.55 = \text{combined average}$$

3. Compare the quantities:

Quantity A: 24.55

Quantity B: 25

Question 7 Test 1, First QR Section**List L consists of the numbers 1, $\sqrt{2}$, x ,...****QA: x QB: 2***Arithmetic: Ranges and Exponents/Roots**Answer: Quantity A is greater*

1. The range of a set of number is the difference between the highest and lowest number. Therefore, given that $\sqrt{2} = 1.4142$, there are two possible ranges:

Possibility 1: 1 (low) to 5 (high) [$5 - 1 = 4$]

Possibility 2: -2.5858 (low) to 1.4142 (high) [$1.4142 - 4 = -2.5858$]

Since $x > 0$, possibility 2 is not an option.

2. Thus, $x = 5$ or $x^2 = 5$.

If $x = 5$, then $x^2 = 25$ and the range is now 24 ($25 - 1 = 24$) so x cannot equal 5.

If $x^2 = 5$, then $x = \sqrt{5}$ or $x = 2.236$

3. Compare the quantities:

Quantity A: 2.236

Quantity B: 2

Question 8 Test 1, First QR Section**One of the roots of the equation $x^2 + kx - 6 = 0$ is....****QA: The value of k QB: -1** *Algebra: Quadratic Equations**Answer: The two quantities are equal*

1. The easiest way to solve for k is to plug $x = 3$ into the equation:

$$x^2 + kx - 6 = 0 \quad x = 3$$

$$3^2 + k3 - 6 = 0$$

$$9 + 3k - 6 = 0$$

$$3 + 3k = 0$$

$$3k = -3$$

$$k = -1$$

You can reverse FOIL. If $x = 3$, then one of the terms is $(x - 3)$:

$$x^2 + kx - 6 = 0$$

$$(x - 3)(x + ?) = 0$$

$$(x - 3)(x + 2) = 0$$

$$x^2 - 3x + 2x - 6 = 0$$

$$x^2 - x - 6 = 0$$

$$x^2 + kx - 6 = 0 \quad \rightarrow \quad x^2 - x - 6 = 0 \quad \rightarrow \quad k = -1$$

2. Compare the quantities:

Quantity A: -1

Quantity B: -1

Question 9 Test 1, First QR Section
If x and y are the tens digit and the...?

Arithmetic: Multiplication

Answer: 12

1. The GRE calculator only displays eight digits, so you would get an “Error” message if you tried to solve this multiplication problem with the GRE calculator during the test. While you can certainly multiply 725,278 by 67,066 by hand, you would waste valuable time (not to mention open yourself up to careless mistakes) because you really only need to multiply the last two digits of each number:

$$\begin{array}{r}
 725278 \\
 \times 67066 \\
 \hline
 4351668 \\
 53516680 \\
 000000 \\
 5076946000 \\
 + 43516680000 \\
 \hline
 486414943\textcircled{48}
 \end{array}
 \quad \text{OR} \quad
 \begin{array}{r}
 78 \\
 \times 66 \\
 \hline
 468 \\
 4680 \\
 \hline
 51\textcircled{48}
 \end{array}$$

$x = 4, y = 8$

2. Now find the sum of $x + y$: $4 + 8 = 12$

Question 10 Test 1, First QR Section
In the xy -plane, what is the slope...?

Coordinate Geometry: Equation of a line

Answer: $\frac{3}{2}$

1. You must know the equation of a line:

$$y = mx + b$$

Where: m is the slope, b is the y -intercept, and x and y are an x - and y -coordinate (x, y)

2. Convert the equation in the question to linear equation format:

$$\begin{aligned}
 3x - 2y &= 8 \\
 -2y &= -3x + 8 \\
 \frac{-2y}{-2} &= \frac{-3x + 8}{-2} \\
 y &= \frac{-3x}{-2} + \frac{8}{-2} \\
 y &= \frac{3}{2}x - 4
 \end{aligned}$$

Since $m = \text{slope}$, the slope of this line is $\frac{3}{2}$.

Question 11 Test 1, First QR Section**If p is a negative number and $0 < s < |p|$...?***Algebra: Exponents/Expression*Answer: $s^2 - p^2$

1. Supply two numbers to satisfy the equation $0 < s < |p|$ where p is a negative number:

$$s = 1, p = -2$$

2. Now plug these values into the expressions in the answer choices to find one that results in a negative number. PowerScore test takers who analyze the answer choices will realize that they can skip the first three answer choices because all three expressions are squared, meaning that all three answer choices will always result in a positive number. So start with the fourth answer:

$$\begin{array}{l} p^2 - s^2 \rightarrow (-2)^2 - 1^2 \rightarrow 4 - 1 \rightarrow 3 \quad \text{No} \\ s^2 - p^2 \rightarrow 1^2 - (-2)^2 \rightarrow 1 - 4 \rightarrow -3 \quad \text{Yes!} \end{array}$$

Question 12 Test 1, First QR Section**10, 10, 10, 10, 8, 8, 8, 8, 12, 12, 11, y** **The twelve numbers shown represent the ages....***Statistics: Median*

Answer: 10

1. Arrange the 11 numbers given in order, from least to greatest:

$$8, 8, 8, 8, 10, 10, 10, 10, 11, 12, 12$$

We still have to add y , but what is the median of this list?

$$\begin{array}{c} \leftarrow 5 \text{ #s} \qquad \qquad \qquad 5 \text{ #s} \rightarrow \\ 8, 8, 8, 8, 10, \textcircled{10}, 10, 10, 11, 12, 12 \end{array}$$

What happens if y is less than 10, such as $y = 1$?

$$\begin{array}{c} \leftarrow 5 \text{ #s} \qquad \qquad \qquad 5 \text{ #s} \rightarrow \\ 1, 8, 8, 8, 8, \textcircled{10, 10}, 10, 10, 11, 12, 12 \end{array}$$

The median is still 10, because the median is now the average of the 6th and 7th terms $[(10 + 10) \div 2 = 10]$. The same thing happens if y is greater than 10, such as $y = 11$:

$$\begin{array}{c} \leftarrow 5 \text{ #s} \qquad \qquad \qquad 5 \text{ #s} \rightarrow \\ 8, 8, 8, 8, 10, \textcircled{10, 10}, 10, 11, 11, 12, 12 \end{array}$$

The median is 10.

Question 13 Test 1, First QR Section
Of the 750 participants in a professional meeting....

Probability: Fractions

Answer: $\frac{2}{5}$

1. First, determine the number of men and woman at the meeting:

$$\begin{array}{r} 750 \text{ total} \\ - 450 \text{ women} \\ \hline 300 \text{ men} \end{array}$$

2. Now determine the number of each gender under 30:

$$\frac{1}{2} \text{ of the female participants are less than 30} \rightarrow \frac{1}{2} \times 450 = 225 \text{ women less than thirty}$$

$$\frac{1}{4} \text{ of the male participants are less than 30} \rightarrow \frac{1}{4} \times 300 = 75 \text{ men less than thirty}$$

3. The total number of people less than 30 years of age is 300 (225 + 75). Find the probability:

$$\text{Probability} = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}} \rightarrow \frac{300}{750} \rightarrow \frac{30}{75} \rightarrow \frac{2}{5}$$

Question 14 Test 1, First QR Section
DISTRIBUTION OF RANKINGS
The sum of the five average ratings was....

Data Analysis

Answer: 22/100

1. Start by computing the sums of the average ratings using the table:

<u>Category</u>	<u>A</u>	<u>B</u>	<u>C</u>
Convenience	5.1	8.0	4.3
Friendliness	5.0	5.5	5.4
Price	5.0	6.4	3.5
Promptness	6.5	6.9	4.1
Reliability	<u>7.8</u>	<u>7.5</u>	<u>4.9</u>
Total:	29.4	34.3	22.2

The airline with the least sum is C (22.2)

2. Now look at the pie graph to see how many travel agents ranked Airline C first. The bottom left quadrant of the circle has 20 agents rating CAB, meaning C was first, A was second and B was third. Above this, 2 agents rated CBA, meaning C was first, B was second, and A was third. So in all 22 agents (20 + 2) rated C first.
3. Now determine the fraction: 22 travel agents out of 100 total rated C first, so 22/100.

Question 15 Test 1, First QR Section**DISTRIBUTION OF RANKINGS****Airline B's average rating for convenience was...?***Data Analysis/Percents*

Answer: 57%

1. Find Airline B's rating for convenience (8.0) and Airline A's rating for convenience (5.1).

<u>Category</u>	<u>A</u>	<u>B</u>	<u>C</u>
Convenience	5.1	8.0	4.3
Friendliness	5.0	5.5	5.4
Price	5.0	6.4	3.5
Promptness	6.5	6.9	4.1
Reliability	<u>7.8</u>	<u>7.5</u>	<u>4.9</u>
Total:	29.4	34.3	22.2

2. Determine the increase:

$$8.0 - 5.1 = 2.9$$

3. Now find the percent change and round to the nearest whole number:

$$\text{Percent change} = \text{increase} \div \text{original number} \times 100 \rightarrow 2.9 \div 5.1 \times 100 = 56.86\% \text{ or } 57\%$$

Question 16 Test 1, First QR Section**DISTRIBUTION OF RANKINGS****If each of the average ratings was the arithmetic mean...***Data Analysis/Statistics*

Answer: 250

1. Start by computing the sums of each category:

<u>Category</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Total</u>
Promptness	6.5	6.9	4.1	17.5
Reliability	7.8	7.5	4.9	20.2

2. Now find the difference between the two totals:

<u>Category</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Total</u>
Promptness	6.5	6.9	4.1	17.5
Reliability	<u>7.8</u>	<u>7.5</u>	<u>4.9</u>	<u>20.2</u>
	Difference: 2.7			

3. Finally, multiply this number by the 100 travel agents:

$$2.7 \times 100 = 270$$

The question asks for an approximate number and the closest is 250.

Question 17 Test 1, First QR Section**A developer has land that has x feet of lake....***Arithmetic: Fractions*

Answer: 4400

1. Start by finding the number of lots:

$$\frac{1}{9} \text{ of the total lots} + 40 \text{ lots} = \text{total lots} \quad \text{total lots} = t$$

$$\frac{1}{9}t + 40 = t \rightarrow (9)\frac{1}{9}t + (9)40 = (9)t \rightarrow 1t + 360 = 9t \rightarrow 360 = 8t \rightarrow 45 = t$$

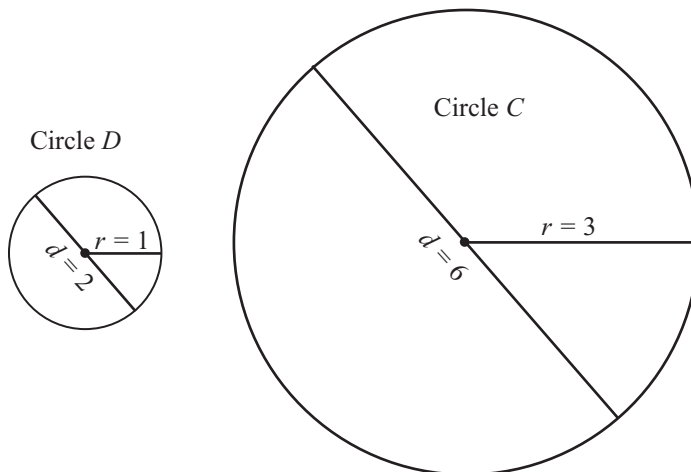
2. If there are 45 total lots and 40 of them have 100 feet of frontage, then 5 of them have 80 feet of frontage. Determine the total frontage:

$$\begin{array}{ll} 40 \text{ have 100 feet:} & 40 \times 100 = 4000 \\ 5 \text{ have 80 feet:} & 5 \times 80 = \underline{400} \\ & 4400 \end{array}$$

Question 18 Test 1, First QR Section**If the diameter of circle C is 3 times....***Geometry: Circles*

Answer: 9

1. Supply a number for the diameter of Circle D and then find the radius and diameter of the other circle. We chose $d = 2$ so that we could have a radius of 1.



2. Compute the area of each circle:

$$\text{Circle D: Area} = \pi r^2 \rightarrow \pi(1)^2 \rightarrow 1\pi$$

$$\text{Circle C: Area} = \pi r^2 \rightarrow \pi(3)^2 \rightarrow 9\pi$$

The area of Circle C is 9 times as large as the area of Circle D.

Question 19 Test 1, First QR Section
Last year Kate spent between 1/4 and...

Arithmetic

Answers: \$43,350, \$47,256, \$51,990, \$53,808

1. To determine Kate's possible gross incomes, TRANSLATE (a PowerScore Solution Strategy):

1/4 of her gross income is 13,470

$$\frac{1}{4}(x) = 13470 \rightarrow (4)\frac{1}{4}(x) = (4)13470 \rightarrow x = 53,880$$

1/3 of her gross income is 13,470

$$\frac{1}{3}(x) = 13470 \rightarrow (3)\frac{1}{3}(x) = (3)13470 \rightarrow x = 40,410$$

2. Kate's gross income falls between \$40,410 and \$53,880, so the last four answer choices are correct.

Question 20 Test 1, First QR Section
The quantities S and T are positive....

Arithmetic: Fractions/Percents

Answers: 33 1/3

1. SUPPLY (PowerScore Solution Strategy) numbers for S , T , and k :

$$S = 4, k = 8, T = 2 \rightarrow S = \frac{k}{T} \rightarrow 4 = \frac{8}{2}$$

2. Now observe what happens when S is increased by 50%:

50% of 4 is 2, so $4 + 2 = 6$

$$S = 6, k = 8 \text{ (constant)}, T = ? \rightarrow S = \frac{k}{T} \rightarrow 6 = \frac{8}{?} \rightarrow (?) (6) = 8 \rightarrow ? = \frac{8}{6} \text{ or } 1.33\bar{3}$$

T decreased from 2 to 1.333, or $0.66\bar{6}$

3. Compute the percent change:

$$\text{Percent change} = \text{decrease} \div \text{original number} \times 100 \rightarrow 0.66\bar{6} \div 2 \times 100 \rightarrow 33.33\bar{3}$$