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GMAT

Quant Section Test

[GEOMETRY]

- Solutions

1. **Solution:**

Topic: Geometry

Concept Tested: Circles

Type of Question: Problem Solving (PS)

Given: Radius is 4 and The line PQ is parallel to RS and the measure of angle RPQ is 45 degrees.

So, angle PRS is also 45 degrees. Angles RPS and PRS are both inscribed angles of the circle. The measures of the corresponding central angles are twice 45, or 90° each.

Therefore, taken together, minor arcs PS and RQ make up 180° of the entire circle, leaving 180° for arcs SR and PQ. Because arc PQ is twice the length of arc SR, arc SR must correspond to a 60° central angle and arc PQ to a 120° central angle. Therefore, arc SR is 60/360=1/6 of the entire circumference of the circle, thus the arc SR= 1/6 of the entire circumference which is 1/6 of $8\pi = 4\pi/3$

Hence, the answer is D.

2. **Solution:**

Topic: Geometry.

Concept Tested: Rectangle.

Type of Question: Data Sufficiency (DS)

Given: Perimeter of the rectangle= 2(l+b) =96.

Question: What is the value of l and b?

Statement I is sufficient:

Given: The area of rectangle is 572 square inches.

If the area is 572, then we get l*b =572 and from the question we know 2l+2b = 96. If we have two equations with the same two variables, we can solve.
For example, solving the system, we get l =26 cm and b =22 cm or l =22 cm and b= 26 cm. The dimensions are 22 and 26 cm;
Therefore, Statement I by itself is sufficient to answer the question asked.

So, eliminate B, C and E.

The answer will be either A or D.

Statement II is sufficient:

Given: The width is 4 inches shorter than the length.

If the width is 4 less than the length, you have b =l −4 and 2 l+2b =96.
Again, we can solve.
For example, solving the system, we get l = 26 cm and w = 22 cm.
The dimensions of the rectangle are 22 and 26 cm;
Therefore, Statement II by itself is sufficient to answer the question asked.

So, eliminate A.

Hence, the answer is D.

3. **Solution:**

Topic: Geometry.

Concept Tested: Rectangular Solid.

Type of Question: Data Sufficiency (DS)

Question: Volume of rectangular solid.

Statement I is insufficient:

Given: Surface area of one of the faces is 48.
Surface area of one face = l*b = 48,
then we can have the following combination of l*b.

1*48
2*24
3*16
4*12
6*8... we can have different values of volume depending on the value of third side.
Therefore, Statement I by itself is insufficient to answer the question asked.

So, eliminate A and D.

The answer will be either B, C or E.

Statement II is insufficient:
Given: Length of one of the edges is 3.
The second statement says that the length of one of the edges is 3. This could be the value of width(w), height(h) or length(l). But to find out the value of the volume, we need all the 3 values.
Therefore, Statement II by itself is insufficient to answer the question asked.

So, eliminate B.

The answer will be either C or E.

Combine both Statements:
Now, combining both the statements together, we see that though we know the surface area of one of the faces and one of the lengths, we still don't know whether the length is the length of w, h, l. With the help of the given information we can find the length of one more length as 48 =3 * w or 3*h or 3*l. We still won't get the value of all the length and hence won't be able to find out the volume.
Therefore, even after combining two statements, it is insufficient to answer the question asked.

So, eliminate C.

Hence, the answer is E.

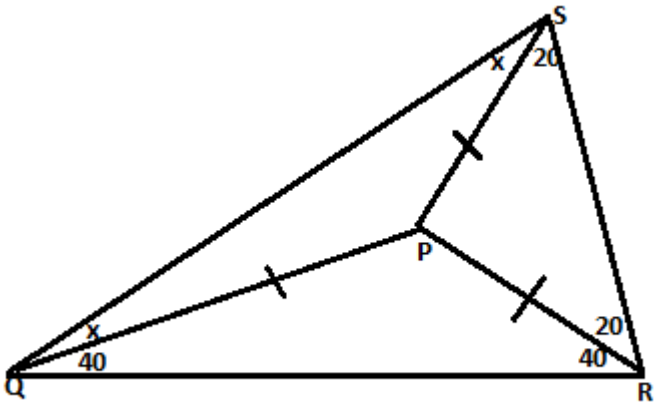
4. **Solution:**

Topic: Geometry

Concept Tested: Triangles

Type of Question: Problem Solving (PS)

Given: PQ=PR=PS, So, we have three isosceles triangles with some equal angles as shown below:



And from the above diagram, we can say that angle SPR=140, angle QPR=100.

Angle QPS =120, because sum of the complete angle is 360.

From triangle SQP, x+x+120=180;

x=30.

Hence, the answer is A.

5. **Solution:**

Topic: Geometry

Concept Tested: Cube

Type of Question: Problem Solving (PS)

We can solve it using units
If a is in m(meters) then y will be m^2 then z will be m^3

A) cannot be true as m*m^2/m^3- m^2/m.. first entity does not have a unit so you cannot subtract it from the second unit which has meter unit
B) Can be true as it is meter - meter
C) cannot be true : No unit - Meter unit
D)cannot be true: √meter unit - no unit
E) cannot be true: 1/meter*√meter unit - 1/meter unit

So, answer will be B

Hence, the answer is B.

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