SAT2-MATHEMATICS Q&As

SAT Section 2: Mathematics

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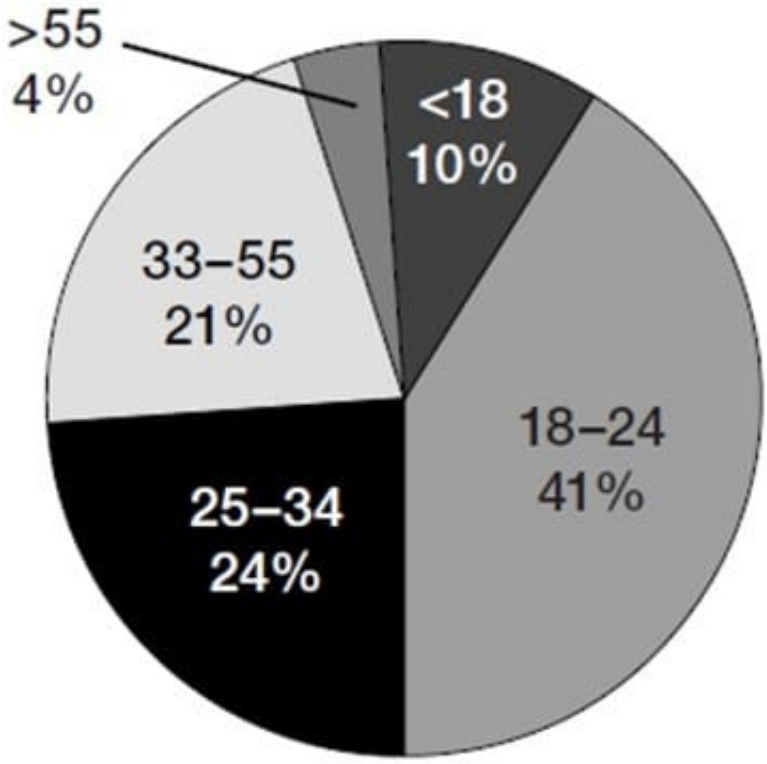
QUESTION 1

SIMULATION Ages of Spring Island Concert Attendees



The diagram above shows the breakdown by age of the 1,560 people who attended the Spring Island Concert last weekend. How many people between the ages of 18 and 34 attended the concert?

A. 1,014

Correct Answer: A

Explanation:

Of the concert attendees, 41% were between the ages of 18–24 and 24% were between the ages of 25–

34. Therefore, 41 + 24 = 65% of the attendees, or (1,560)(0.65) = 1,014 people between the ages of 18 and 34 attended the concert.

QUESTION 2

If the statement "All students take the bus to school" is true, then which of the following must be true?

A. If Courtney does not take the bus to school, then she is not a student.

B. If Courtney takes the bus to school, then she is a student.

C. If Courtney is not a student, then she does not take the bus.

D. all of the above

E. none of the above

Correct Answer: A

Since all students take the bus to school, anyone who does not take the bus cannot be a student. If Courtney does not take the bus to school, then she cannot be a student. However, it is not necessarily true that everyone who takes the bus to school is a student, nor is it necessarily true that everyone who is not a student does not take the bus. The statement "All students take the bus to school" does not, for instance, preclude the statement "Some teachers take the bus to school" from being true.

QUESTION 3

Rob has six songs on his portable music player. How many different four-song orderings can Rob create?

A. 30

B. 60

C. 120

D. 360

E. 720

Correct Answer: D

The order of the four songs is important. The orderings A, B, C, D and A, C, B, D contain the same four songs, but in different orders. Both orderings must be counted. The number of six-choose-four orderings is equal to (6)(5)(4)(3)= 360.

QUESTION 4

The ratio of the number of cubic units in the volume of a cube to the number of square units in the surface area of the cube is 2:3. What is the surface area of the cube?

A. 16 square units

B. 24 square units

C. 64 square units

D. 96 square units

E. 144 square units

Correct Answer: D

The volume of a cube is equal to e3, where e is the length of an edge of the cube. The surface area of a cube is equal to 6e2. If the ratio of the number of cubic units in the volume to the number of square units in the surface area is 2:3, then three times the volume is equal to two times the surface area:

$$3e^3=2(6e^2)$$

$$3e^3=12e^2$$

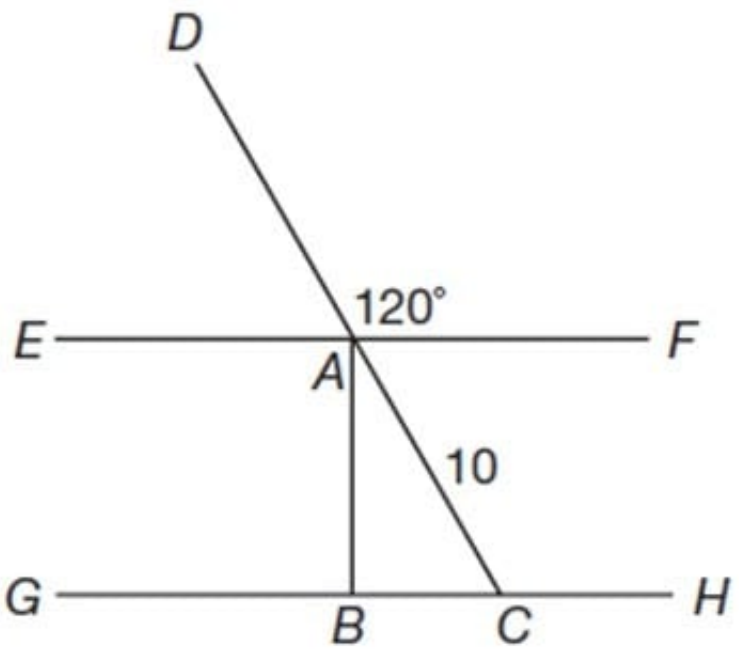
$$3e=12$$

$$e=4$$

$$6(4)^2=96$$

The edge of the cube is four units and the surface area of the cube is square units.

QUESTION 5



In the diagram above, lines EF and GH are parallel, and line AB is perpendicular to lines EF and GH. What is the length of line AB?

A. 5

B. 52

C. 53

D. 102

E. 103

Correct Answer: C

Line AB is perpendicular to line BC, which makes triangle ABC a right triangle. Angles DAF and DCH are alternating angles -- angles made by a pair of parallel lines cut by a transversal. Angle DAF angle DCH, therefore, angle DCH = 120 degrees. Angles DCH and ACB form a line. There are 180 degrees in a line, so the measure of angle ACB = 180 ?120 = 60 degrees. Triangle ABC is a 30-60-90 right triangle, which means that the length of the hypotenuse, AC, is equal to twice the length of the leg opposite the 30-degree angle, BC. Therefore, the length of BC is 10/2, or 5. The length of the leg opposite the 60-degree angle, AB, is 3 times the length of the other leg, BC. Therefore, the length of AB is.