

# SAT2-MATHEMATICS<sup>Q&As</sup>

SAT Section 2: Mathematics

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**QUESTION 1**

A line has a y-intercept of  $-6$  and an x-intercept of  $9$ . Which of the following is a point on the line?

- A.  $(-6, -10)$
- B.  $(1, 3)$
- C.  $(0, 9)$
- D.  $(3, -8)$
- E.  $(6, 13)$

Correct Answer: A

A line with a y-intercept of  $-6$  passes through the point  $(0, -6)$  and a line with an x-intercept of  $9$  passes through the point  $(9, 0)$ . The slope of a line is equal to the change in y values between two points on the line divided by the change in the x values of those points. The slope of this line is equal to

$$\frac{0 - (-6)}{9 - 0} = \frac{6}{9} = \frac{2}{3}$$

$$y = \frac{2}{3}x - 6.$$

The equation of the line that has a slope of  $\frac{2}{3}$  and a y-intercept of  $-6$  is

$$\frac{2}{3}(-6) - 6 = -4 - 6 = -10;$$

When  $x = -6$ , y is equal to

$$y = \frac{2}{3}x - 6$$

therefore, the point  $(-6, -10)$  is on the line

**QUESTION 2**

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  $e^3$ , where  $e$  is the length of an edge of the cube. The surface area of a cube is equal to  $6e^2$ . 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 3

$$y = \frac{x+6}{x^2+7x-18}$$

The equation is undefined when

- A. -9.
- B. -2.
- C. -6.
- D. 0.
- E. 9.

Correct Answer: A

An equation is undefined when the value of a denominator in the equation is equal to zero. Set  $x^2+7x+18$  equal to zero and factor the quadratic to find its roots:

$$x^2 + 7x - 18 = 0$$

$$(x + 9)(x - 2) = 0$$

$$x = -9, x = 2$$

**QUESTION 4**

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 5**

$$p < 0, q > 0, \text{ and } r > p$$

If , then which of the following must be true?

A.  $p + r > 0$

B.  $r p < r q$

C.  $p r < r q$

D.  $r + q > q$

E.  $p + r < r + q$

- A. Option A
- B. Option B
- C. Option C
- D. Option D
- E. Option E

Correct Answer: E

$$p + r < r + q.$$

*$p < 0$  and  $q > 0$ , then  $p < q$ . Since  $p < q$ ,  $p$*

If plus any value will be less than that same value (whether positive or negative). Therefore,

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