

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

SAT Section 2: Mathematics

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**QUESTION 1**

A spinner is divided into eight equal regions, labeled one through eight. If Jenna spins the wheel, what is the probability that she will spin a number that is less than four and greater than two?

A.  $\frac{1}{8}$

B.  $\frac{9}{32}$

C.  $\frac{3}{8}$

D.  $\frac{1}{2}$

E.  $\frac{3}{4}$

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Correct Answer: A

There are three numbers on the wheel that are less than four (1, 2, 3), but only one of those numbers (3) is greater than two. The probability of Jenna spinning a number that is both less than 4 and greater than 2 is  $\frac{1}{8}$ .

**QUESTION 2**

All of the following are less than  $\frac{2}{5}$  EXCEPT:

A.  $\frac{1}{3}$

B. 0.04

C.  $\frac{3}{8}$

D.  $\frac{3}{7}$

E. 0.0404

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Correct Answer: D

$$\frac{2}{5} = 0.040, \quad \frac{3}{7} \approx 0.43.$$

$$\frac{3}{7} > \frac{2}{5}$$

Comparing the hundredths digits,  $3 > 0$  therefore,  $0.43 > 0.40$  and

**QUESTION 3**

How does the area of a rectangle change if both the base and the height of the original rectangle are tripled?

A. The area is tripled.

- B. The area is six times larger.
- C. The area is nine times larger.
- D. The area remains the same.
- E. The area cannot be determined.

Correct Answer: C

Since both dimensions are tripled, there are two additional factors of 3. Therefore, the new area is  $3 \times 3 = 9$  times as large as the original. For example, use a rectangle with a base of 5 and height of 6. The area is  $5 \times 6 = 30$  square units. If you multiply the each side length by 3, the new dimensions are 15 and 18. The new area is  $15 \times 18$ , which is 270 square units. By comparing the new area with the original area, 270 square units is nine times larger than 30 square units;  $30 \times 9 = 270$ .

#### QUESTION 4

##### SIMULATION

If  $-6b + 2a - 25 = 5$  and  $a/b + 6 = 4$ , what is the value of  $(b/a)^2$ ?

- A.  $1/4$

Correct Answer: A

Solve  $-6b + 2a - 25 = 25$  for a in terms of b:  $-6b + 2a - 25 = 5$ ,  $-3b + a = 15$ ,  $a = 15 + 3b$ . Substitute a in terms of b into the second equation:

$$\frac{15 + 3b}{b} + 6 = 4, \quad \frac{15}{b} + 3 + 6 = 4, \quad \frac{15}{b} = -5, \quad b = -3.$$

Substitute b into the first equation to find the value of a:  $-6b + 2a - 25 = 5$ ,  $-6(-3) + 2a - 25 = 5$ ,  $18 + 2a = 30$ ,  $2a = 12$ ,  $a = 6$ . Finally, ,

$$\left(\frac{b}{a}\right)^2 = \left(\frac{-3}{6}\right)^2 = \left(-\frac{1}{2}\right)^2 = \frac{1}{4}.$$

#### QUESTION 5

It takes six people eight hours to stuff 10,000 envelopes. How many people would be required to do the job in three hours?

- A. 4
- B. 12
- C. 16

D. 18

E. 24

Correct Answer: C

Six people working eight hours produce  $(6)(8) = 48$  work-hours. The number of people required to produce 48 work-hours in three hours is  $48/3 = 16$ .

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