



SAT2-MATHEMATICS^{Q&As}

SAT Section 2: Mathematics

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QUESTION 1

Lindsay grows only roses and tulips in her garden. The ratio of roses to tulips in her garden is 5:6. If there are 242 total flowers in her garden, how many of them are tulips?

- A. 22
- B. 40
- C. 110
- D. 121
- E. 132

Correct Answer: E

The number of roses, $5x$, plus the number of tulips, $6x$, is equal to 242 total flowers: $5x + 6x = 242$, $11x = 242$, $x = 22$. There are $5(22) = 110$ roses and $6(22) = 132$ tulips in Lindsay's garden.

QUESTION 2

- A. $\{-8, 1\}$
- B. $\{8, -1\}$
- C. $\{0, -8, 1\}$
- D. $\{0, 8, -1\}$
- E. $\{0, -1, -8, 1, 8\}$

Correct Answer: C

QUESTION 3

Greg has nine paintings. The Hickory Museum has enough space to display three of them. From how many different sets of three paintings does Greg have to choose?

- A. 27
- B. 56
- C. 84
- D. 168
- E. 504



Correct Answer: C

Be careful not to count the same set of three paintings more than once -- order is not important. A ninechoose-three combination is equal to

$$\frac{\{9\}\{8\}\{7\}}{\{3\}\{2\}\{1\}} = \frac{504}{6} = 84$$

QUESTION 4

The function $m \# n$ is equal to $m^2 - n$. Which of the following is equivalent to $m\#(n \# m)$?

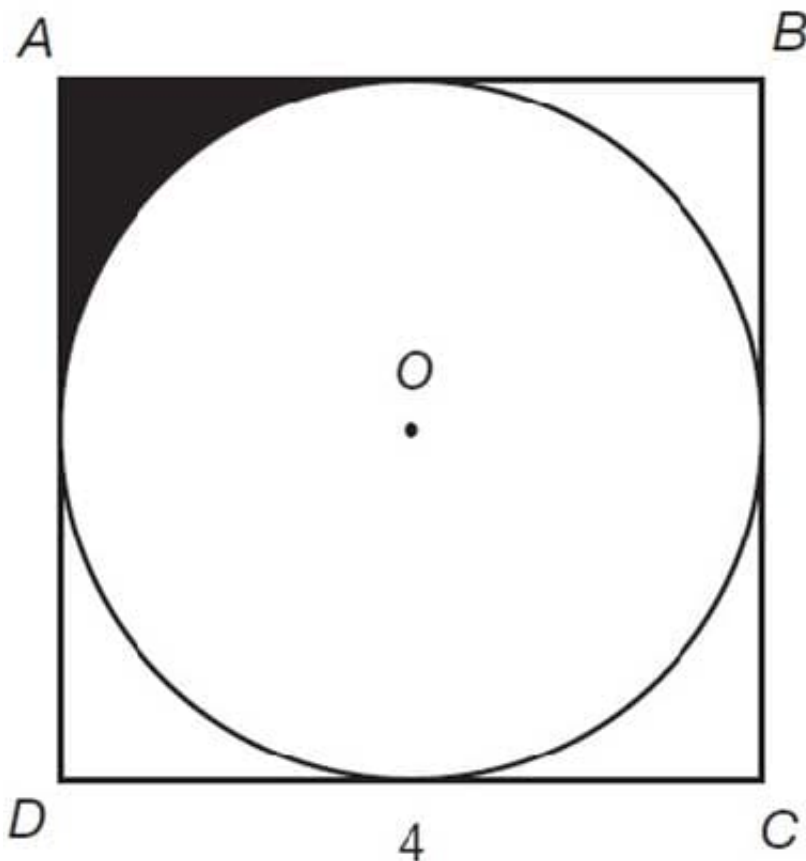
- A. $-n$
- B. $n^2 - m$
- C. $m^2 + m - n^2$
- D. $(m^2 - n)^2 - n$
- E. $(n^2 - m)^2 - m$

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

Correct Answer: C

Explanation: $M\#n$ is a function definition. The problem is saying " $m\#n$ " is the same as " $m^2 - n$ ". If $m\#n$ is $n^2 - m$, then $n\#m$ is $n^2 - m$. So, to find $m\#(n\#m)$, replace $(n\#m)$ with the value of $(n\#m)$, which is $n^2 - m$: $m\#(n^2 - m)$. Now, use the function definition again. The function definition says "take the value before the $\#$ symbol, square it, and subtract the value after the $\#$ symbol": m squared is m^2 minus the second term, $(n^2 - m)$, is equal to $m^2 - (n^2 - m) = m^2 - n^2 + m$.

QUESTION 5



In the diagram above, the length of a side of square ABCD is four units. What is the area of the shaded region?

- A. 4
- B. $4 - \pi$
- C. $4 - 4\pi$
- D. 16π
- E. $16 - 4\pi$

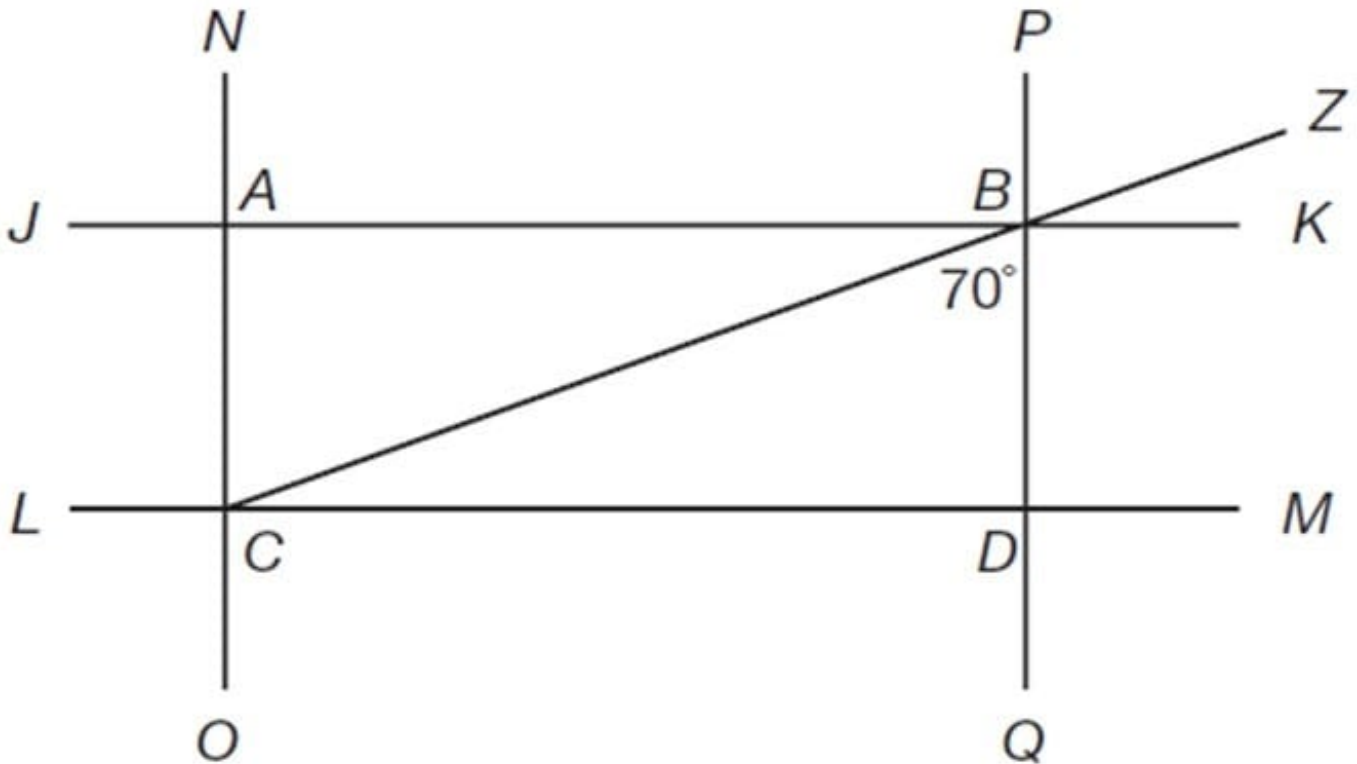
Correct Answer: B

Explanation:

The area of a square is equal to S^2 , where s is the length of a side of the square. The area of ABCD is $4^2 = 16$ square units. The area of a circle is equal to πr^2 , where r is the radius of the circle.

The diameter of the circle is four units. The radius of the circle is $4/2 = 2$ square units. The area of the circle is equal to $\pi(2)^2 = 4\pi$. The shaded area is equal to one-fourth of the difference between the area of the square and the area of the circle: $1/4(16 - 4\pi) = 4 - \pi$.

QUESTION 6



In the diagram above, lines NO and PQ are parallel to each other and perpendicular to lines JK and LM. Line JK is parallel to line LM. If angle CBD is 70 degrees, what is the measure of angle ZBK?

- A. 10 degrees
- B. 20 degrees
- C. 70 degrees
- D. 90 degrees
- E. 110 degrees

Correct Answer: B

Explanation:

Angle CBD and angle PBZ are alternating angles — their measures are equal. Angle PBZ = 70 degrees. Angle PBZ + angle ZBK form angle PBK. Line PQ is perpendicular to line JK; therefore, angle PBK is a right angle (90 degrees). Angle ZBK = angle PBK - angle PBZ = 90 - 70 = 20 degrees.

QUESTION 7

$$\frac{5}{16} < x < \frac{9}{20}$$



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

B. $\frac{2}{5}$

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

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

E. $\frac{4}{9}$

If 0.34

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Correct Answer: C

$\frac{5}{16} = 0.3125$ and $\frac{9}{20} = 0.45$; $\frac{3}{8} = 0.375$ which is between 0.34 and 0.40, and between 0.3125 and 0.45.

QUESTION 8

Which of the following could be equal to $x/4x$?



A. $\frac{-1}{4}$

B. $\frac{0}{4}$

C. 0.20

D. $\frac{4}{12}$

E. $\frac{5}{20}$

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Correct Answer: E

Divide the numerator and denominator of $\frac{x}{4x}$ by x , leaving $\frac{1}{4}$ Divide the numerator and denominator of $\frac{5}{20}$ by 5. This fraction is also equal to $\frac{1}{4}$.

QUESTION 9All 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

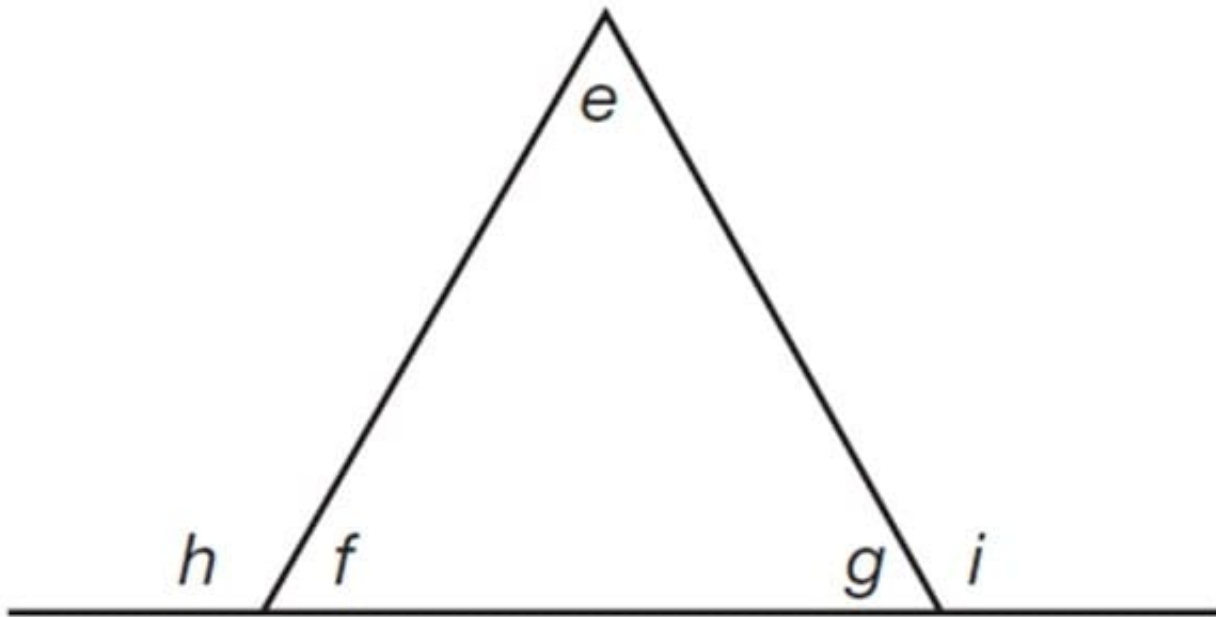
Correct Answer: D

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

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

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

QUESTION 10



Based on the diagram above, which of the following is true?

- A. $i = e + f$
- B. $g + i = h + e$
- C. $e + i = e + h$
- D. $e + g + i = 180$
- E. $e + f + g + h + i = 360$

A. Option A

B. Option B

C. Option C

D. Option D

E. Option E

Correct Answer: A

The measure of an exterior angle of a triangle is equal to the sum of the two interior angles of the triangle to which the exterior angle is NOT supplementary. Angle i is supplementary to angle g , so the sum of the interior angles e and f is equal to the measure of angle

$$i: i = e + f.$$



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