







Question No. 1 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

 <p>Question</p>	<p>1. Which of the following sets is a subset of the whole numbers?</p> <p>(A) Integers (B) Real numbers (C) Natural numbers (D) Rational numbers (E) Irrational numbers</p>
 <p>Feedback</p>	<p>A. Incorrect! The set of integers is not a subset of the whole numbers.</p> <p>B. Incorrect! The set of real numbers is not a subset of the whole numbers.</p> <p>C. Correct! The set of natural numbers is a subset of the whole numbers.</p> <p>D. Incorrect! The set of rational numbers is not a subset of the whole numbers.</p> <p>E. Incorrect! The set of irrational numbers is not a subset of the whole numbers.</p>
 <p>Solution</p>	<p>The set of whole numbers is made up of zero and the natural numbers. Therefore, the set of natural numbers are a subset of the whole numbers.</p> <p>(C) Natural numbers</p>




Question No. 2 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

 <p>Question</p>	<p>2. Which number is an element of the set of rational numbers?</p> <p>(A) $\sqrt{64}$ (B) π (C) $\sqrt{3}$ (D) $\frac{\pi}{2}$ (E) $\frac{\sqrt{2}}{2}$</p>
 <p>Feedback</p>	<p>A. Correct! The square root of 64 is 8 which can be written as the ratio $\frac{8}{1}$, so it is a rational number.</p> <p>B. Incorrect! This number cannot be written as the ratio of two integers, so it is an irrational number.</p> <p>C. Incorrect! This number cannot be written as the ratio of two integers, so it is an irrational number.</p> <p>D. Incorrect! This number cannot be written as the ratio of two integers, so it is an irrational number.</p> <p>E. Incorrect! This number cannot be written as the ratio of two integers, so it is an irrational number.</p>
 <p>Solution</p>	<p>All rational numbers can be written as the ratio of two integers. The square root of 64 is 8 which can be written as the ratio $\frac{8}{1}$, so it is a rational number.</p> <p>(A) $\sqrt{64}$</p>




Question No. 3 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

 <p>Question</p>	<p>3. Evaluate the numerical expression. $-8 - (-2)(3)$</p> <p>(A) -14 (B) -18 (C) -3 (D) -2 (E) 13</p>
 <p>Feedback</p>	<p>A. Incorrect! Review the order of operations then try again.</p> <p>B. Incorrect! Review the order of operations then try again.</p> <p>C. Incorrect! Review the order of operations then try again.</p> <p>D. Correct! Properly applying the order of operations gives the answer -2.</p> <p>E. Incorrect! Review the order of operations then try again.</p>
 <p>Solution</p>	<p>Apply the order of operations.</p> $\begin{aligned} -8 - (-2)(3) &= -8 - (-6) && \text{Multiply } -2 \text{ and } 3 \\ &= -8 + 6 && \text{Use the double negative rule to simplify } -(-6) \\ &\text{to } 6 \\ &= -(8 - 6) && \text{Use the rule for adding numbers with unlike} \\ &\text{signs to get } -(8 - 6) \\ &= -2 \end{aligned}$ <p>(D) -2</p>

Question No. 4 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

 <p>Question</p>	<p>4. Which number is an element of the set of irrational numbers?</p> <p>(A) $\sqrt{25}$ (B) $\sqrt{15}$ (C) $\frac{2}{7}$ (D) 3 (E) $4.\bar{3}$</p>
 <p>Feedback</p>	<p>A. Incorrect! The square root of 25 simplifies to 5 so it is a rational number.</p> <p>B. Correct! The square root of 15 cannot be written as the ratio of two integers so it is an irrational number.</p> <p>C. Incorrect! This is a rational number because it is the ratio of two integers.</p> <p>D. Incorrect! This is a rational number because it can be written as the ratio of two integers, $\frac{3}{1}$.</p> <p>E. Incorrect! This is a rational number because it is a repeating decimal. Try again.</p>
 <p>Solution</p>	<p>Irrational numbers cannot be written as the ratio of two integers. The square root of 15 cannot be written as the ratio of two integers. Therefore, the square root of 15 is an irrational number.</p> <p>(B) $\sqrt{15}$</p>

Question No. 5 of 10


Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.



Question

5. Which number is an element of the set of natural numbers?

(A) 3
(B) 0
(C) -2
(D) 7.5
(E) $\sqrt{6}$



Feedback

A. Correct!
This number is an element of the natural numbers.

B. Incorrect!
This number is not an element of the natural numbers.

C. Incorrect!
This number is not an element of the natural numbers.

D. Incorrect!
This number is not an element of the natural numbers.

E. Incorrect!
This number is not an element of the natural numbers.






Solution

The natural numbers are used for ordering and counting. The set of natural numbers is $\{1, 2, 3, \dots\}$

(A) 3

Question No. 6 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

 <p>Question</p>	<p>6. Evaluate the numerical expression. $6(2^3 + 4) \div 9 - 5$</p> <p>(A) -1 (B) 3 (C) 15 (D) 18 (E) 49</p>
 <p>Feedback</p>	<p>A. Incorrect! Review the order of operations then try again.</p> <p>B. Correct! Properly applying the order of operations gives the result of 3.</p> <p>C. Incorrect! Review the order of operations then try again.</p> <p>D. Incorrect! Review the order of operations then try again.</p> <p>E. Incorrect! Review the order of operations then try again.</p>
 <p>Solution</p>	<p>Use order of operations to solve.</p> $6(2^3 + 4) \div 9 - 5 = 6(8 + 4) \div 9 - 5$ <p>Begin simplifying the expression in parentheses</p> $= 6(12) \div 9 - 5$ <p>Finish simplifying the expression in parentheses</p> $= 72 \div 9 - 5$ <p>Multiply 6 and 12 to get 72</p> $= 8 - 5$ <p>Divide 72 by 9 to get 8</p> $= 3$ <p>Simplify $8 - 5$ to get 3</p> <p>(B) 3</p>

Question No. 7 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.



Question

7. Which expression simplifies to a whole number?

- (A) $4 - 6$
- (B) $-3(-5)$
- (C) $26 \div 4$
- (D) -2^3
- (E) $\frac{8}{3}$



Feedback

A. Incorrect!
The expression $4 - 6$ simplifies to -2 , which is an integer but not a whole number.

B. Correct!
The product of -3 and -5 is 15 , which is a whole number.

C. Incorrect!
The expression $26 \div 4$ simplifies to 6.5 , which is not a whole number.

D. Incorrect!
The expression -2^3 simplifies to -8 , which is not a whole number.

E. Incorrect!
The expression $\frac{8}{3}$ simplifies to $2.\bar{6}$, which is not a whole number.

The set of whole numbers includes the natural numbers and zero, $\{0, 1, 2, 3, \dots\}$.
The expression $-3(-5)$ simplifies to 15 which is a whole number.




(B) $-3(-5)$



Solution

Question No. 8 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

 <p>Question</p>	<p>8. Evaluate the numerical expression. $5 - 8 \cdot 3 + 2$</p> <p>(A) 2 (B) -7 (C) -15 (D) -17 (E) -21</p>
 <p>Feedback</p>	<p>A. Incorrect! You did not properly apply the order of operations. Please try again.</p> <p>B. Incorrect! You did not properly apply the order of operations. Please try again.</p> <p>C. Incorrect! You did not properly apply the order of operations. Please try again.</p> <p>D. Correct! By properly applying the order of operations, this expression simplifies to -17.</p> <p>E. Incorrect! You did not properly apply the order of operations. Please try again.</p>
 <p>Solution</p>	<p>Apply the order of operations to solve.</p> $5 - 8 \cdot 3 + 2 = 5 - 24 + 2$ <p style="text-align: right;">Perform multiplication</p> $= -19 + 2$ <p style="text-align: right;">Perform the addition and subtraction from left to right</p> $= -17$ <p style="text-align: right;">The expression $-19 + 2$ simplifies to -17</p> <p>(D) -17</p>

Question No. 9 of 10

Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

**Question**

9. Which expression simplifies to an integer?

(A) $-16 \div 3$

(B) $\sqrt{72}$

(C) $\sqrt{74 - 38}$

(D) $7(3.5)$

(E) $\frac{24}{16}$

**Feedback**

A. Incorrect!

This expression simplifies to a repeating decimal, not an integer.

B. Incorrect!

This expression simplifies to an irrational square root, not an integer.

C. Correct!

This expression simplifies to 6 which is an integer.

D. Incorrect!

This expression simplifies to a terminating decimal, not an integer.

E. Incorrect!

This expression simplifies to a terminating decimal, not an integer.




**Solution**

The set of integers includes the naturals, their opposites, and zero, $\{\dots-2, -1, 0, 1, 2, \dots\}$. The square root of $74 - 38$ simplifies to the square root of 36. The square root of 36 is 6, which is an integer.

(C) $\sqrt{(74 - 38)}$

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Instructions: (1) Read the problem and answer choices carefully (2) Work the problems on paper as needed (3) Pick the answer (4) Go back to review the core concept tutorial as needed.

 <p>Question</p>	<p>10. Evaluate the numerical expression. $6 \div 2 - 3 \cdot 5$</p> <p>(A) 5 (B) 0 (C) $-\frac{6}{13}$ (D) -12 (E) -30</p>
 <p>Feedback</p>	<p>A. Incorrect! You did not properly apply the order of operations. Please try again.</p> <p>B. Incorrect! You did not properly apply the order of operations. Please try again.</p> <p>C. Incorrect! You did not properly apply the order of operations. Please try again.</p> <p>D. Correct! Proper application of the order of operations simplifies this expression to -12.</p> <p>E. Incorrect! You did not properly apply the order of operations. Please try again.</p>
 <p>Solution</p>	<p>Use the order of operations to solve.</p> $6 \div 2 - 3 \cdot 5 = 3 - 3 \cdot 5$ <p style="text-align: right;">Perform the multiplication and division from left to right</p> $= 3 - 15$ $= -12$ <p style="text-align: right;">Subtract 3 and 15 to get -12</p> <p>(D) -12</p>