

- 1) Solve this equation. What is the solution set?

$$\frac{a+3}{6} + \frac{a+1}{2} = a$$

- A* $\{-2\}$
B $\{1\}$
C $\left\{\frac{1}{3}\right\}$
D $\left\{-\frac{20}{7}\right\}$
E $\{3\}$
- 2) When Liam got his car repaired after an accident, he was charged \$569 for parts and the remaining part of the bill was mechanic's labor. If the total bill was \$1025 and labor was \$48 per hour, how many hours did the mechanic work on his car?
- A* 8.5 hr.
B 9.75 hr.
C 8.75 hr.
D 10.25 hr.
E None of the above.
- 3) A chemist needs 2 liters of a solution that is 35% hydrochloric acid. She has 20% and 60% hydrochloric acid solutions available. If x represents the amount of 20% solution she uses, which equation could be used to solve for x ?
- A* $0.2x + 0.6(2 - x) = 0.35(2)$
B $0.2x + 0.6x = 0.35(2)$
C $0.2x + 0.6(2 - x) = 2$
D $0.2x + 0.6(x - 2) = 0.35(2)$
E $0.2x + 0.6(2) = 0.35x$

4) Subtract: $(-2 + \sqrt{-25}) - (-6 - \sqrt{-49})$

A $4 + 12i$

B $-8 + 12i$

C $4 - 12i$

D $-8 - 2i$

E $4 + 2i$

5) Multiply: $(12 - 10i)\left(-4 + \frac{1}{2}i\right)$

A $-43 - 46i$

B $-48 - 51i$

C $-53 + 46i$

D $-43 + 46i$

E None of the above.

6) **One** of the solutions of the equation below can be described by which of the following?

$$\frac{1}{x} + \frac{1}{3x-2} = 2$$

A It is greater than $\frac{1}{2}$, but less than 1.

B It is at least 1, but less than $\frac{3}{2}$.

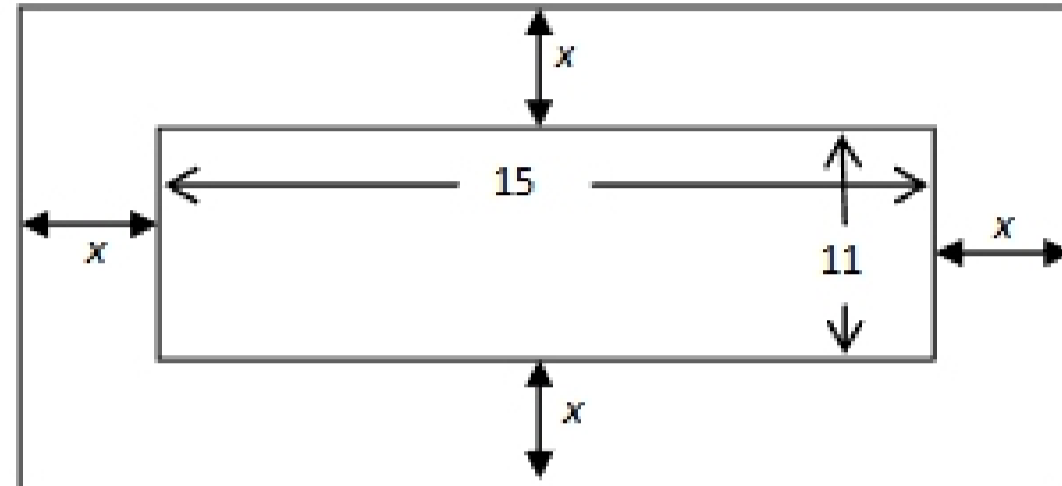
C It is at least $\frac{3}{2}$, but less than 2.

D It is at least 2, but less than $\frac{5}{2}$.

E It is $\frac{5}{2}$ or greater.

- 7) A rectangular garden measures 15 feet by 11 feet and is surrounded by a walkway of uniform width as shown. If the area of the garden *plus* the walkway is 285 square feet and x represents the width of the walkway, which simplified equation could be used to find the width of the walkway?

- A $x^2 + 13x - 30 = 0$
 B $x^2 + 26x - 120 = 0$
 C $x^2 - 13x - 30 = 0$
 D $x^2 + 13x + 30 = 0$
 E $x^2 - 26x + 120 = 0$



- 8) Two hoses working together can fill a tank in 2 hours. The smaller hose, working alone, can fill the tank in 3 hours more time than the larger hose alone. How long would it take the **larger** hose alone to fill the tank?

- A 2 hours
 B $2\frac{1}{2}$ hours
 C $3\frac{1}{2}$ hours
 D 4 hours
 E 3 hours

- 9) Solve the equation. Select the correct statement. $\sqrt{42 - 2x} = x + 3$

- A There are two solutions, both positive.
 B There are two solutions, one positive and the other negative.
 C There are two solutions, both negative.
 D There is one positive solution.
 E There is one negative solution.