

SAT and ACT Combo Test: Answer Explanations

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Section 6 – SAT No Calculator Math Test

10 minutes, 7 questions

1. A more-expensive fertilizer would raise the cost of lawn care, k . It would NOT change the area of the lawn, the area of the mulched beds, or the cost of planting in the mulched beds. **The correct answer is B.**

2. “Translate” this question into a mathematical equation:

$$\text{final exam} = 3 \times \text{section quiz}$$

Substitute 15 for final exam and x for section quiz:

$$15 = 3x$$

Look at the answer choices. This equation is the same as option A.

The correct answer is A.

3. The key to answering this question is to notice that because the equation of the line is $y = mx - 2$, the intercept is located at $(0, -2)$. Now, use the slope formula to find the slope between this point and (r, s) .

$$m = \frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{s - (-2)}{r - 0} = \frac{s + 2}{r}$$

The correct answer is D.

4. For a system of equations to have infinite solutions, the two equations must be equivalent. Multiply the first equation by 3 and the second equation by 2 so you can compare them directly.

$$8x + 2y = 1 \rightarrow$$

$$\text{multiply by 3} \rightarrow$$

$$24x + 6y = 3$$

$$12x + 3y = k \rightarrow$$

$$\text{multiply by 2} \rightarrow$$

$$24x + 6y = 2k$$

These equations would be exactly the same if $3 = 2k$, so solve that equation for k to get your answer.

The correct answer is C.

5. First, find the x -values of the two points where this line intersects the parabola by setting the right sides of the equations equal to each other and solving.

$$\begin{aligned}(x + 3)^2 &= 2x + 6 \\ x^2 + 6x + 9 &= 2x + 6 \\ x^2 + 4x + 3 &= 0 \\ (x + 3)(x + 1) &= 0 \\ x &= -3 \text{ and } x = -1\end{aligned}$$

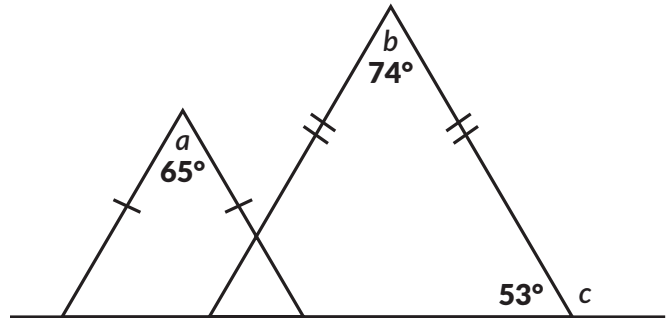
Second, find the y values for each of these intersection points by plugging -3 and -1 into either of the equations. You will get $(-3, 0)$ and $(-1, 4)$.

Finally, use the distance formula to find the distance between these points.

$$\begin{aligned}d &= \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \\ &= \sqrt{(-1 - (-3))^2 + (4 - 0)^2} = \\ &= \sqrt{20} = \\ &= 2\sqrt{5}\end{aligned}$$

The correct answer is B.

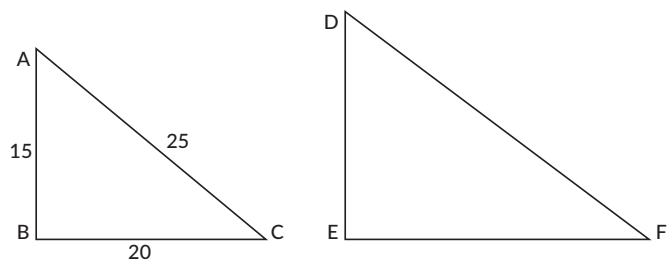
6. The key to this problem is figuring out the angles one by one and labeling them on the diagram as you go. First, label a as 65° . Because $b = 2a - 56 = 2(65) - 56 = 74$, label b as 74° . Find the base angles of the larger triangle with $(180 - 74) \div 2 = 53$.



Finally, we can see that $c = 180 - 53 = 127$.

The correct answer is 127.

7. Wrap your head around this problem by drawing the two triangles and labeling everything you can.



Use the Pythagorean Theorem or the 3-4-5 Pythagorean Triple to determine that $BC = 20$. Next, notice that because these triangles are similar, $m\angle F = m\angle C$, so $\cos F = \cos C$.

$$\text{Finally, } \cos C = \frac{\text{adj}}{\text{hyp}} = \frac{20}{25} = \frac{4}{5}.$$

The correct answer is 4/5 or 0.8.