

Practice SAT Questions

1. $y = x^2$
 $2y + 6 = 2(x + 3)$

If (x, y) is a solution to the system of equations above and $x > 0$, what is the value of xy ?

$(1, 1)$

$y = 1^2$

$= 1$

$2x^2 + 6 = 2x + 6$

$2x^2 - 2x = 0$

$2x(x - 1) = 0$

$x = 0, 1$

2. If $a^2 + b^2 = z$ and $ab = y$, which of the following is equivalent to $4z + 8y$?

A) $(a + 2b)^2$

B) $(2a + 2b)^2$

C) $(4a + 4b)^2$

D) $(4a + 8b)^2$

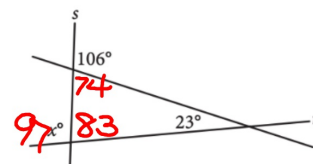
$4(a^2 + b^2) + 8ab$
 $4a^2 + 4b^2 + 8ab$

3. $\frac{2x+6}{(x+2)^2} - \frac{2}{x+2} \frac{(x+2)}{(x+2)}$

The expression above is equivalent to $\frac{a}{(x+2)^2}$, where a is a positive constant and $x \neq -2$. What is the value of a ?

$= \frac{2}{(x+2)^2}$
 $a = 2$

4. Intersecting lines r, s , and t are shown below.



What is the value of x ?

970

5. $-2x + 3y = 6$

In the xy -plane, the graph of which of the following equations is perpendicular to the graph of the equation above?

A) $3x + 2y = 6$

B) $3x + 4y = 6$

C) $2x + 4y = 6$

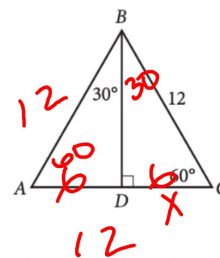
D) $2x + 6y = 3$

$$3y = 2x + 6$$

$$y = \frac{2}{3}x + 2$$

$$m_2 = -\frac{3}{2}$$

6.



$$\text{hyp} = 2 \cdot \text{sl}$$

$$\text{ll} = \sqrt{3} \cdot \text{sl}$$

In $\triangle ABC$ above, what is the length of segment AD?

A) 4

B) 6

C) $6\sqrt{2}$

D) $6\sqrt{3}$

1. REVIEW

a. Multiply the following expressions.

$$(x + y)(x + y) = x^2 + 2xy + y^2$$

$$(a + 2)(a - 4) = a^2 - 2a - 8$$

b. Factor the following expressions.

$$b^2 - 8b + 15 = (b - 3)(b - 5)$$

$$2x^2 + 5x - 12 = (2x - 3)(x + 4)$$

c. Solve the following equations.

$$3x - 7 = 20$$

$$x = 9$$

$$4a - 5 = 2a + 7$$

$$a = 6$$

2. Three snowboarders are heading back to the lodge after a long day on the slopes. Slick, the best snowboarder of the three, always tells the truth. Toober sometimes tells the truth, while Mogulman, the worst snowboarder, never tells the truth. Label each snowboarder's picture with his correct name.



3. Fill in the blanks to complete a statement that defines the process you used to label the snowboarders.

Deductive reasoning

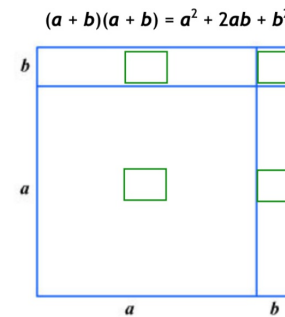
uses statements known to be true to establish the truth of additional statements that follow from them.

2. Solve the following equation. As you complete each step in the solution, take time to think about why that step is true. Show all of your work.

$$4x + 2 = 10$$

b^2	ab	a^2
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1. Use the answer choices above to fill in the blanks in the diagram and show why the mathematical statement is true.



Before you continue with the Student Activity Sheet, take some time to review the properties of real numbers shown in the table below.

Properties of Equality	
For any real numbers a , b , and c :	
Addition Property	Substitution Property
If $a = b$, then $a + c = b + c$.	If $a = b$, then b can substitute for a in any equation.
Subtraction Property	Reflexive Property
If $a = b$, then $a - c = b - c$.	$a = a$
Multiplication Property	Symmetric Property
If $a = b$, then $ac = bc$.	If $a = b$, then $b = a$.
Division Property	Transitive Property
If $a = b$, then $\frac{a}{c} = \frac{b}{c}$; $c \neq 0$.	If $a = b$, and $b = c$, then $a = c$.

3. When the properties are listed alongside an equation so that each step is justified, the result is an algebraic proof. Use the properties of equality to complete the justification of the solution to the equation you solved in question 2.

Statements	Reasons
$4x + 2 = 10$	Given equation
$4x + 2 - 2 = 10 - 2$	_____
$4x = 8$	Simplify
$\frac{4x}{4} = \frac{8}{4}$	_____
$x = 2$	Simplify