

# ☆ START HERE ☆

## Chapter 1 Pre-Test

Dear Student,

Start here. You can use a pencil and a calculator. Try not to fall for any traps. Let's see what you can do!

Sincerely,

Ms. Krey

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1.) Which of the following is equivalent to  $3 - 2(x - 4)$ ?

- A)  $-5 - 2x$
- B)  $-1 + 2x$
- C)  $4 - x$
- D)  $11 - 2x$

2.) Which of the following complex numbers is equal to  $(4 + 3i) + (-7 + i)$ , for  $i = \sqrt{-1}$ ?

- A)  $-3 + 2i$
- B)  $-3 + 4i$
- C)  $25 - 17i$
- D)  $31 + 17i$

3.) Which ordered pair  $(x, y)$  satisfies the system of equations shown below?

$$x + y = 2$$

$$\frac{x}{3} + y = 0$$

- A)  $(-3, 9)$
- B)  $(-1, 3)$
- C)  $(3, -1)$
- D)  $(9, -3)$

4.) Sean purchased a new car in 2015. Three years later, he sold it to a dealer for 40% less than he paid for it. The dealer then resold it to another customer for 20% more than she paid Sean. The price the final customer paid for the car was what percent of the original price Sean paid in 2015?

- A) 40%
- B) 60%
- C) 72%
- D) 80%

5.) If  $f(x) = \frac{(x+3)(x-6)}{2x-4}$ , what is  $f(0)$ ?

A)  $-\frac{9}{2}$

B) 0

C)  $\frac{9}{2}$

D) undefined

6.) In a class of 27 plumbers, the mean score of the male plumbers on the final exam was 83. If the mean score of the 15 female plumbers in the class was 92, what was the mean score of the whole class?

A) 86.2

B) 87.0

C) 87.5

D) 88.0

7.) If  $x$  is an integer and  $7 - 3x > -8$ , what is the maximum value of  $x$ ?

A) 3

B) 4

C) 5

D) 6

8.) Consider the equation

$y = ax^3 + bx^2 + cx + d$  where  $a, b, c,$  and  $d$  are constants. When the equation is graphed on the  $xy$ -plane, the  $x$ -intercepts are 0, 5, and 6. Which of the following must be a factor of  $ax^3 + bx^2 + cx + d$ ?

A)  $x + 5$

B)  $x - 30$

C)  $x - 6$

D)  $x + 11$

9.) Given that  $a > 1$  and  $b > 1$ , which option is equal to the expression below?

$$\frac{a^3 b^{-2}}{a^{\frac{1}{3}} b^{\frac{1}{2}}}$$

A)  $\frac{a^3 \sqrt[3]{a}}{b^2 \sqrt{b}}$

B)  $\frac{b^2 \sqrt{b}}{a^2 \sqrt[3]{a^2}}$

C)  $\frac{a^2 \sqrt{b}}{b^2 \sqrt[3]{a^2}}$

D)  $\frac{b^2 \sqrt[3]{a^2}}{a^2 \sqrt{b}}$

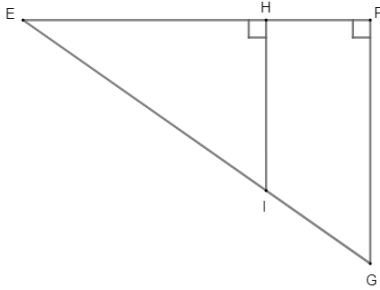
10.) The following table shows the distribution of the employees of a small business according to their salary and educational level.

		Highest level of education		
		High School	Undergraduate Degree	Graduate Degree
Salary	Below \$50,000	25	8	0
	\$50,000-90,000	12	12	5
	Above \$90,000	2	4	5

Based on the table, what fraction of the employees who have a high school degree as their highest level of education do not have a salary above \$90,000?

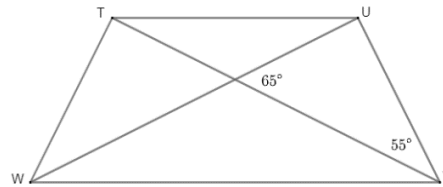
- A)  $\frac{37}{73}$
- B)  $\frac{39}{73}$
- C)  $\frac{39}{62}$
- D)  $\frac{37}{39}$

11.) In the triangle shown below,  $EH = 16$ ,  $HF = 8$ , and  $\cos E = \frac{4}{5}$ . What is the length of  $\overline{FG}$ ?



/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

12.) In the figure below, TUVW is an isosceles trapezoid with bases  $\overline{TU}$  and  $\overline{WV}$ . What is the measure, in degrees, of  $\angle UWV$ ? (Disregard the degree symbol when gridding your answer.)



/	○	○	○	○
.	○	○	○	○
0	○	○	○	○
1	○	○	○	○
2	○	○	○	○
3	○	○	○	○
4.	○	○	○	○
5	○	○	○	○
6	○	○	○	○
7	○	○	○	○
8	○	○	○	○
9	○	○	○	○
0	○	○	○	○

**Congratulations on finishing your first pre-test!** If you got any questions right, pat yourself on the back. It means your years of studying math are paying off. But the true value of this exercise comes from the questions you missed. That's why I snuck a lot of traps into these questions. Each time you fall for one of my traps, you're less likely to be tricked by it on the real SAT.

Use the answer key below to identify which questions you missed and try to fix them.

- If you can figure them out, then analyze why you didn't get them right the first time. Did you make a calculation error? Did you mis-read the question? Were you rushing? Did you fall for a trap? Use this opportunity to identify what types of errors you're prone to and start thinking about strategies for reducing these errors.
- If you can't figure them out, check the full explanation posted at [www.tp4s.com](http://www.tp4s.com). If that's not enough, ask a friend or teacher for help. Once you understand how to arrive at the correct answer, put a big star next to the question. Come back to it in a few days and try it again. This will ensure you don't forget what you learned.

As you work through the problems in this book, I want you to celebrate your mistakes. Each one is a golden opportunity to learn something new! Throughout this book, I'll teach you lots of tricks for capitalizing on your mistakes to improving your SAT math skills. I can tell already that you have big plans for yourself, and I'm looking forward to helping you achieve them!

Sincerely,

Ms. Krey

**Answer Key:**

- 1.) D
- 2.) B
- 3.) C
- 4.) C
- 5.) C
- 6.) D
- 7.) B
- 8.) C
- 9.) A
- 10.) D
- 11.) 18
- 12.) 32.5