



SAT Math Booster

PARALLEL PATHWAY • DIAGNOSTIC ACROSS FOUR DOMAINS • 20 ITEMS • 60 MINUTES • CALCULATOR PERMITTED

This diagnostic samples the four content domains of the digital SAT Math section - Algebra; Advanced Math; Problem-Solving and Data Analysis; and Geometry and Trigonometry - together with the process habits that decide performance under time. It produces a domain profile and an error profile, not a predicted score. PMC does not promise score increases, and these are original items, not real test questions.

BEFORE YOU BEGIN

A calculator is permitted throughout, as on the digital SAT. Part of what we are watching is whether you know when NOT to reach for it.

Work at a steady pace and note any question that cost you more than about two minutes.

Leave a question blank rather than guessing, so the profile reflects what you know.

After each wrong answer, we will ask which kind of error it was. That classification matters more than the score.

SECTION A Multiple choice

10 items

Choose one answer. If you are unsure, leave it blank rather than guessing.

01 [Algebra] If $3(x - 2) = 2x + 8$, then $x =$

- A) 14
- B) 2
- C) -2
- D) 10

02 [Algebra] A line passes through (0, -3) with slope 2. Its equation is

- A) $y = 2x - 3$
- B) $y = -3x + 2$
- C) $y = 2x + 3$
- D) $y = -2x - 3$

03 [Advanced Math] If $f(x) = x^2 - 4x + 3$, then $f(x) = 0$ when

- A) $x = 1$ or 3
- B) $x = -1$ or -3
- C) $x = 2$ only
- D) $x = 4$ or 3



- 04 [Advanced Math] Which is equivalent to $(x^3 \cdot x^5)/x^2$?
- A) x^6
 - B) x^{15}
 - C) x^7
 - D) x^{10}
- 05 [Data] A survey of 200 students found 60 preferred tea. What percentage is that?
- A) 30%
 - B) 60%
 - C) 3.33%
 - D) 140%
- 06 [Data] The mean of 5 numbers is 20. If one number is removed and the mean becomes 22, the removed number was
- A) 12
 - B) 18
 - C) 22
 - D) 2
- 07 [Data] Which best describes data with most values clustered low and a long tail to the right?
- A) Skewed right
 - B) Skewed left
 - C) Symmetric
 - D) Bimodal
- 08 [Geometry] A circle has equation $(x-2)^2 + (y+1)^2 = 25$. Its centre and radius are
- A) (2, -1), $r = 5$
 - B) (-2, 1), $r = 5$
 - C) (2, -1), $r = 25$
 - D) (-2, 1), $r = 25$
- 09 [Geometry] In a right triangle, one acute angle is 30 degrees and the hypotenuse is 10. The shortest side is
- A) 5
 - B) 10
 - C) $5\sqrt{3}$
 - D) 20



10 [Trigonometry] In a right triangle, $\tan(\theta) = \text{opposite over}$

- A) adjacent
- B) hypotenuse
- C) opposite
- D) the angle

SECTION B Student solving

6 items

Show your working. We are reading the method, not only the answer.

11 Solve the system: $2x + 3y = 12$, $x - y = 1$. Show your method and note how long it took.

12 A store raises a price by 20%, then discounts the new price by 20%. Is the final price the original? Show why.



- 13 The function $h(t) = -16t^2 + 64t$ models height in feet. Find the maximum height and when it occurs.

- 14 A recipe uses 3 cups of flour for 24 biscuits. How many cups for 60 biscuits? Show the proportional reasoning.

- 15 Explain when using the calculator on this test costs you time rather than saving it. Give an example from Section A.



- 16 Choose the one Section A question you found hardest. Redo it here, and say what made it hard.

SECTION C Error analysis

4 items

Each shows work containing a mistake. Find the FIRST incorrect step, say what the student believed, and give the correct answer.

- 17 Find the first incorrect step and correct it.

A price rises 20% then falls 20%.
Student: it returns to the original
because +20 and -20 cancel.

- 18 Find the first incorrect step and correct it.

$$(x + 5)^2 \\ = x^2 + 25$$

- 19 A student answered 'the average speed is 50 km/h'. Find the flaw and give the correct value.

Travels 100 km at 40 km/h,
then 100 km at 60 km/h.
Student: average = $(40+60)/2 = 50$

- 20 Classify this error, then give the correct answer.

Question asks for the value of $3x$.
Student solves correctly: $x = 4$
Student answers: 4

What happens next

Bring this completed sheet to your consultation. A tutor reads it alongside a short conversation with the student and any school work you choose to share, then recommends a level. No placement is ever decided by a score on its own, and no student is placed without a tutor's approval.