Upward Bound
SAT Math
Senior Workbook

FUNDAMENTALS

JOE BLOGGS & PROCESS OF ELIMINATION (POE)

Another way to take advantage of the order of difficulty that ETS uses on the SAT Math section is to use Joe Bloggs. Remember, Joe always chooses the most appealing answer choice.

On difficult questions, the obvious choice is the wrong answer.

By predicting which answer Joe will pick, you can eliminate wrong answers on difficult questions. Identify the JB choices for the following question:

23. On Tuesday, Jasmine buys an apple pie. She eats $\frac{2}{5}$ of the pie that night. On Thursday, she takes out the pie again and eats $\frac{2}{5}$ of what is left. How much of the pie still remains uneaten?

(A) $\frac{4}{25}$
(B) $\frac{1}{5}$
(C) $\frac{6}{25}$
(D) $\frac{9}{25}$
(E) $\frac{3}{5}$

BALLPARKING

Ballparking will also help you eliminate answer choices on problem-solving questions.

If you can eliminate *any* of the answer choices, always guess.

9. If the thousands digit is interchanged with the units digit of 8,543, the resulting number is

(A) 4,995 less than 8,543
(B) 495 less than 8,543
(C) equal to 8,543
(D) 495 more than 8,543
(E) 4,995 more than 8,543

INTRODUCTION

YOUR CALCULATOR IS ONLY AS SMART AS YOU ARE

Always bring your calculator to class. Get used to using it.

Using a calculator is a great way to help you prevent careless math errors, but it isn't a magic wand. It only knows as much about solving SAT math questions as you do. If you don't understand what a question is asking, punching numbers into your calculator isn't going to help you.

Always make sure you understand the question before you start calculating.

Scientific and graphing calculators are permitted. Be sure to put a new battery in your calculator the week before the test!

5. When the sum of 1.324 and 3.743 is rounded to the nearest tenth, the result is

(A) 5.0
(B) 5.067
(C) 5.07
(D) 5.08
(E) 5.1

BITE-SIZED PIECES

Don't be overwhelmed by word problems. ETS often hides important information within the question, so you shouldn't try to digest an entire question in one big gulp. Take bite-sized pieces. Chew one piece at a time.

When there's something to figure out, STOP! Figure it out before you move on.

6. Andy subscribed to three magazines for a year at a cost of \$13, \$10, and \$22, respectively. If he agreed to pay $\frac{1}{4}$ of the total cost initially and the rest in five equal payments, how much was each of the five equal payments?

(A) \$6.75
(B) \$6.85
(C) \$6.95
(D) \$9.00
(E) \$11.25

FUNDAMENTALS

An *integer* is a number that does not contain a decimal or a fraction.

1) How many integers are within the darkened line above?

_____

2) How many positive integers are within the darkened line above?

_____

7. If $\frac{p}{4}$ is an integer, which of the following CANNOT be the value of p?

(A) 12
(B) 16
(C) 18
(D) 20
(E) 24

A *negative* number is a number less than zero.

A *positive* number is a number greater than zero.

Zero is neither positive nor negative.

4. If $a + b$ is a negative number, and $a = 5$, which of the following could be the value of b?

(A) −2
(B) −3
(C) −4
(D) −5
(E) −6

$Q = \{2, 2, 3, 3, 4, 4, 6\}$

Distinct means different.

14. Which of the following is the sum of three distinct even numbers in Set Q?

(A) 7
(B) 10
(C) 12
(D) 13
(E) 14

An *even* number is any integer divisible by 2.

An *odd* number is any integer not divisible by 2.

Zero *is* even.

3. If n is the difference between two positive integers, and $n = 4$, then the two positive integers could be

(A) 4 and 6
(B) 5 and 6
(C) 3 and 3
(D) 1 and 4
(E) 2 and 6

A *difference* is the result of subtracting.

A *sum* is the result of adding.

15. Which of the following is the product of two consecutive odd integers?

(A) 12
(B) 13
(C) 14
(D) 15
(E) 16

A *product* is the result of multiplying.

A *quotient* is the result of dividing.

4. $4 \div (7 - 5)^2 \times 3 =$

(A) 10
(B) 14
(C) 16
(D) 24
(E) 76

Consecutive means "in order," usually from smallest to largest.

The *order of operations* is:

Parentheses
Exponents
Multiplication & Division
Addition & Subtraction

6. If r is the remainder when 45 is divided by 6, what is the remainder when 17 is divided by r?

(A) 1
(B) 2
(C) 3
(D) 4
(E) 5

A *remainder* is what is left over after dividing.

A *prime number* is a number divisible only by itself and 1.

1 is not prime.

2 is the smallest prime number, and is the only even prime.

8. What is the sum of the distinct prime factors of 60?

(A) 9
(B) 10
(C) 11
(D) 12
(E) 30

A *factor* of a number divides evenly into that number. Another word for factor is *divisor*.

A *multiple* of a number is *divisible* by that number.

7. Which of the following is the first positive integer multiple of 16?

(A) 0
(B) 2
(C) 8
(D) 16
(E) 32

3. If the product of m, n, o, and p is 0, and the product of n, o, p, and q is greater than 0, which of the following must be true?

(A) $m = 0$
(B) $n = 0$
(C) $o = 0$
(D) $p = 0$
(E) $q = 0$

RULES OF ZERO:

- Even
- Integer
- Not positive or negative
- Any number times zero is zero.
- Zero divided by any number is zero – but you can't divide by zero.

DECIMALS AND FRACTIONS

2	.	7	8	3
units/ones		tenths	hundredths	thousandths

5. 0.461 =

(A) $\frac{6}{1000} + \frac{4}{100} + \frac{1}{10}$
(B) $\frac{4}{1000} + \frac{6}{100} + \frac{1}{10}$
(C) $\frac{1}{1000} + \frac{4}{100} + \frac{6}{10}$
(D) $\frac{4}{1000} + \frac{1}{100} + \frac{6}{10}$
(E) $\frac{1}{1000} + \frac{6}{100} + \frac{4}{10}$

8. Of the following numbers, which is the greatest?

(A) 0.1002
(B) 0.099
(C) 0.08
(D) 0.103
(E) 0.11

3. Which of the following is greater than $\frac{2}{5}$ but less than $\frac{3}{5}$?

(A) .20
(B) .25
(C) .30
(D) .35
(E) .45

The fraction bar means "divided by."

Solve the following:

$\frac{3}{8}+\frac{7}{12}=$ _____ $\frac{2}{3}-\frac{15}{16}=$ _____

$\frac{3}{8}\times 56=$ _____ $\frac{2}{3}\times\frac{9}{17}=$ _____

$\frac{1}{16}+\frac{3}{4}=$ _____ $\frac{18}{15}\div\frac{3}{5}=$ _____

Many calculators have fraction features that allow you to type problems like these right in. If yours doesn't, simply convert the fractions to decimals.

To reduce a fraction, divide both the top and the bottom by the same number. Try small numbers like 2, 3, and 5. Reduce until you can't reduce anymore.

3. Which of the following expresses $\frac{78}{48}$ in its most reduced form?

(A) $\frac{3}{24}$

(B) $\frac{13}{8}$

(C) $\frac{5}{20}$

(D) $\frac{6}{18}$

(E) $\frac{26}{52}$

$$\frac{s}{60} \quad \frac{s}{77} \quad \frac{s}{80}$$

6. Each of the fractions above must be in its simplest reduced form. Which of the following could be a value of s?

(A) 7
(B) 9
(C) 11
(D) 13
(E) 15

Ballpark!

5. Which of the following expressions is the greatest?

(A) $2+\frac{1}{5}$

(B) $2\div\frac{1}{5}$

(C) $2\times\frac{1}{5}$

(D) $2-\frac{1}{5}$

(E) $\frac{1}{5}-2$

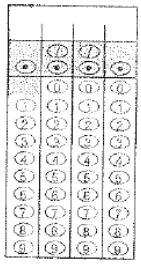
Don't waste time reading the instructions! Everything you need to know is on these pages.

Here is everything you really need to know about how to grid in answers:

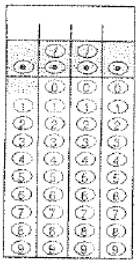
- **Write your answer in at the top of the grid before bubbling in your answer.**
- **Start at the far left, every time.**
- **Don't reduce fractions if they fit.**
- **Don't round decimals.**
- **Don't grid mixed numbers.**

Grid-Ins allow you flexibility that multiple-choice answers don't. If you want to use fractions, you can. If you prefer decimals, no problem.

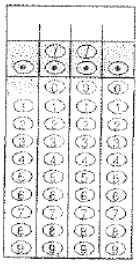
$\frac{4}{48}$ =



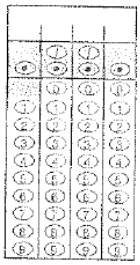
0 =



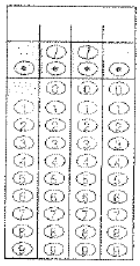
$3\frac{1}{4}$ =



.8978 =



$\frac{15}{20}$ =



YOU CAN'T GRID IN:

- Negatives
- Variables
- Square Roots
- π
- % or $

If you get one of these in your answer, check your math!

19. If the sum of four consecutive integers is 86, what is the least of these integers?