

Preparing for the Math Performance Test College of Saint Elizabeth

What is the format of the math testing?

Two sections (Arithmetic and Algebra) are each composed of 35 multiple choice exercises and test your ability to: perform calculations, interpret prose into math semantics, and solve applications that you might run into as part of everyday life.

What types of skills will be tested?

The exercises utilize numbers & variables with positive & negative values. Be able to calculate integers, fractions, and decimals. A wide range of math skills will be tested, including:

- **Basic calculations** (+, -, x, ÷)
- **Factors & Multiples** finding factors, multiples, prime factors, GCF, least common denominator)
- **Fraction Misc.**
(simplifying, equivalent, improper, mixed numbers, w/exponents, complex, algebraic)
- **Percentages** (what [X], is [=], of [·], % or percent, ["divided by 100"])
- **Exponents** (3^4 means "3 is used as a factor 4 times" or " $3 \cdot 3 \cdot 3 \cdot 3$ ")
- **Order of Operations** (Please Excuse My Dear Aunt Sally)
- **Variable Expressions** (writing in simplest form)
- **Solving basic equations**
- **Writing Algebraic equations in words**
- **Inequalities** ($>$, $<$, \geq , \leq)
- **Ordering values**
- **Polynomials** (factoring, multiplying, **FOIL**)
- **Quadratic Equations** ($ax^2 + bx + c = 0$, where a, b, and c are constants and $a \neq 0$)
- **Rectangular Coordinate System**
(formed by two number lines: One horizontal [x-axis] and one vertical [y-axis])
- **Linear equations** ($y = mx + b$)
- **Solving systems of equations**
(by graphing, by the substitution method, by the addition method)
- **Rounding** (giving an approximate value to an exact number)
- **Estimating** (approximating a calculation by calculating with rounded numbers)
- **Averages** (sum of numeric values divided by the quantity of those numeric values)
- **Absolute Value**
(“distance from zero on the number line” – always positive; written like $|8|$ and $|-8|$.)
- **Ratios** (“1 is to 2 as 3 is to 6” or “1:2 is the same ratio as 3:6” or “ $1/2 = 3/6$ ”)
- **Radicals**
- **Properties** (Distributive, Identity, Commutative, Associative, of zero)
- **Math semantics and symbols, like:**
 - **Integers** (...-2, -1, 0, 1, 2, ...)
 - **Non-zero number**
 - **Add** (+, sum, plus, and, added to, increased by, the total of, more than)
 - **Subtract** (-, difference, minus, less, decreased by, less than)
 - **Multiply** (x, ·, () product, times, twice, of)
 - **Divide** (÷, /, quotient)
 - **Between**
 - **Equal** (=)
 - **Equivalent**
 - **Factor** (a number that is multiplied)
 - **Equation**
 - **Inequality**

Calculation Practice

- 1) Find the sum of 122, 86, and 1016.
- 2) Find the difference between 4906 and 478.
- 3) Find the product of 43 and 659.
- 4) Find the quotient of 174, 298 and 25.
- 5) Find all the factors of 44.
- 6) Find the GCF of 30 and 36.
- 7) Add: -24, 16, and -32
- 8) Subtract: -27 and -32 -21 and 5 12 and -10
- 9) Multiply: -100 and 25 -18 and -7 847, 46, 121, 0, 33
- 10) Divide: -294 by -14 $19,254 \div -6$ 0 by 16 $-16 \div 0$
- 11) Simplify: $(-2)^2 - (-3)^2 \div (1 - 4)^2 \cdot 2 - 6$
- 12) Simplify to lowest terms: $\frac{5}{14}$ $\frac{30}{105}$
- 13) Write as an improper fraction: $2 \frac{5}{14}$ $7 \frac{3}{4}$
- 14) Write as a mixed number: $\frac{35}{14}$ $3 + \frac{7}{12}$
- 15) Write as a fraction that is equivalent to $\frac{4}{9}$ and has a denominator of 72.
- 16) Add: $\frac{3}{17} + \frac{8}{51}$ $\frac{7}{12}$ and $-\frac{1}{2}$ $-\frac{11}{15}$ and $-\frac{7}{10}$
- 17) Subtract: $\frac{2}{3}$ and $\frac{11}{18}$ $-\frac{2}{9}$ and $-\frac{7}{18}$ $\frac{3}{4}$ and $-\frac{5}{7}$
- 18) Multiply: 3 and $-\frac{8}{9}$ $\frac{2}{3}$ and $\frac{11}{18}$ $2 \frac{3}{4}$ and $\frac{4}{7}$
- 19) Divide: $\frac{5}{9}$ by $\frac{2}{3}$ 3 by $-\frac{7}{8}$ $-\frac{8}{9}$ and $-\frac{4}{5}$
- 20) Solve: $\frac{3}{8} + \frac{2}{5} \div \frac{4}{7}$
- 21) Add: $313.987 + 12.09$ -247.8 and -193.4 -21 and 5.6
- 22) Subtract: 0.124 and -0.04 $-3.981 - 4.32$ -13.2 and -5.86
- 23) Multiply: -100 (34.25) -28.7 and -9.2 3.6 and 0.0108
- 24) Divide: 14.2 by 1000 0.396 by 3.6 $1.003 \div -0.59$
- 25) Write as a fraction: .028 32%
- 26) Write as a decimal: 325% $\frac{19}{25}$
- 27) Write as a percent: $\frac{7}{40}$ 1.236
- 28) What is 8% of 100?
- 29) 10 is 10% of what?
- 30) What percent of 24 is 18?

- 31) **Round:** 1249.68 to the nearest hundred 19,888.2 to the nearest thousand
 40.0508 to the nearest tenth 299.3997 to the nearest thousandth
- 32) **Estimate** the product of 1609 and 83
- 33) **Place the correct symbol, < or >, between each pairs of numbers:**
 -12 -7 $7/8$ $17/20$ $3/7$ 0.429
- 34) **Rewrite, using exponents:** $x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot y \cdot y \cdot y \cdot y$
- 35) **Exponents:** $3^2 =$ $(2/3)^4 =$ $xy^3 =$ $(xy)^3 =$
- 36) **Absolute Value:** $|25| =$ $|-25| =$ $-|18| =$ $-|-18| =$
- 37) **Solve each quotation for x:** $x + 15 = 27$
 $3x = 81$
 $4x - 7 = 21$
 $2x - 1 = 5x - 3$
 $3 + 7/8x = 1/4x - 2$
- 38) **Find x and y that make both equations true:** $x + y = 91$
 $y = 2x + 4$
- 39) **Factor:** $8x^2 + 8x + 16$ $12x^3y^4 - 18x^2y^2 + 6xy^2$
 $a^2 - 2a - 15$ $b^2 + 2b - 15$
 $m^2 - 16$ $n^2 - 10n + 25$
- 40) **Multiply:** $(x - 3)(x + 15)$ $(a + 3)(2 - 15)$
 $(b + 3)^2$ $(y - 5)(y - 10)$
 $(d + 8)(d - 8)$ $(k - 12)^2$
- 41) **Solve:** $a^2 + 4a - 5 = 0$ $t^2 - 3t = -2$
 $12y^2 + 8y = 0$ $m + 15 = m(m - 1)$
- 42) If you scored 82, 90, and 74 on math tests, **what is your average score on the three?**
- 43) If the **ratio** of a room's length to its width is $4/3$ and the room is 16 ft. long, how wide is it?
- 44) What is the **perimeter** of a rectangular lot that is 127 feet long and 104 feet wide?
- 45) **Calculate:** $(\sqrt{2a}) (\sqrt{8a})$ $(3\sqrt{ac}) (\sqrt{12ac^3})$
 $(\sqrt{b^6}) \div (\sqrt{b^2})$ $\sqrt{da^2} \div \sqrt{d^2a}$
- 46) **Fractions, Complex & Algebraic**
 $\frac{2/3 - 1/6}{-5/8 - 1/4} + \frac{x + 2}{x^2 - 3x - 10} + \frac{2}{5 - x}$

31) 1200

20,000

40.1

299.400

32) $2000 \cdot 80 = 160,000$

33) $-12 < -7$

$7/8 > 17/20$

$3/7 < 0.429$

34) x^6y^4

35) 9

$16/81$

xy^3

x^3y^3

36) 25

25

-18

-18

37) $x = 12$

$x = 27$

$x = 7$

$x = 2/3$

$x = -8$

38) $x = 29$ and $y = 62$

39) $8(x^2 + x + 2)$

$6xy^2(2x^2y^2 - 3x + 1)$

$(a - 5)(a + 3)$

$(b - 3)(b + 5)$

$(m - 4)(m + 4)$

$(n - 5)^2$

40) $x^2 + 12x - 45$

$a^2 - 12a - 45$

$b^2 + 6b + 9$

$y^2 - 15y + 50$

$d^2 - 64$

$k^2 - 24k + 144$

41) $a = -5$ or $a = 1$

$t = 2$ or $t = 1$

$y = -2/3$ or $y = 0$

$m = 5$ or $m = -3$

42) $246 \div 3 = 82$

43) 12 ft. wide

44) $127\text{feet} + 127\text{feet} + 104\text{feet} + 104\text{feet} = 462\text{ feet}$

45) 4a

$6ac^2(\sqrt{3})$

b^2

$\sqrt{a/d}$

46) $-4/7$

$\frac{-1}{x-5}$