

About the ACCUPLACER Test

The ACCUPLACER (Elementary Algebra) is a 12 question placement exam. Its purpose is to make sure you are put in the appropriate math course.

A student whose score is 67 or higher will be placed in MATH 1111 (College Algebra) or MATH 1101 (Mathematical Modeling)

A student whose score is 55 - 66 will be placed in MATH 1111 (College Algebra) **and** MATH 0999 (Support of College Algebra) or MATH 1101 (Mathematical Modeling) **and** MATH 0998 (Support of Mathematical Modeling)

A student whose score is 32 – 54 will be placed in MATH 0989 (Foundations of College Algebra) or MATH 0988 (Foundations of Mathematical Modeling).

A minimum score of 32 is required for admission into Atlanta Metropolitan State College.

Topics in the Elementary Algebra test

Operations with integers and rational numbers:

Addition, subtraction, multiplication, and division

Absolute value

Order of operations

Operations with algebraic expressions:

Evaluation of algebraic expressions and formulas

Addition, subtraction, multiplication and division of polynomials

Positive rational roots and exponents

Squaring a binomial

Factoring differences of squares ($a^2 - b^2$) and trinomials ($ax^2 + bx + c$)

Addition, subtraction, multiplication and division of algebraic fractions

Division (Simplification) of algebraic fractions

Equations, inequalities, and word problems:

Solving linear equations and inequalities

Solving systems of linear equations

Solving quadratic equations by factoring

Translating written phrases or sentences into algebraic expressions or equations

Solving word problems (geometric reasoning and graphing, translating from words to algebraic expressions)

Helpful Websites

<https://accuplacerpractice.collegeboard.org/> (Accuplacer Study App)

<http://www.test-guide.com/free-accuplacer-practice-tests.html>

<https://uniontestprep.com/accuplacer-test/practice-test/?gclid=CJPyw8n04c0CFdcYgQodRiIP8g>

<https://secure-media.collegeboard.org/digitalServices/pdf/accuplacer/accuplacer-sample-questions-for-students.pdf>

<http://www.mometrix.com/academy/accuplacer-test/> (Review videos and Practice tests)

<http://www.accuplacerpracticetest.com/>

<https://accuplacer.collegeboard.org/students>

To prepare for the exam

- You are going to need an elementary (introductory)/intermediate algebra textbook. You can purchase one from the bookstore or borrow one from the library. Use your textbook to review the topics in the handout.
- You can also visit the following websites in order to review the topics listed in this handout.

<http://www.wtamu.edu/academic/anns/mps/math/mathlab/>

Click on Beginning Algebra or Intermediate Algebra

<http://khanacademy.org>

Click on Arithmetic and Pre-algebra or Algebra

<http://www.youtube.com>

Type in the topic you want to review

- Work on the practice questions in this handout that correspond to the topic you are reviewing.
- If you have any questions while you are preparing for the exam, visit the math lab in the Center for Academic Success.
- Visit the websites listed on the previous page for additional practice problems.
- **Try not to use a calculator since you will have limited access to a calculator during the exam.**

Before the exam

- Eat right and drink plenty of water. Avoid loading up on caffeine and sugar.
- Get plenty of sleep.
- Plan to arrive at the test site early. If you arrive too early, take a walk around the area and relax.
- Do not plan anything for after the test that could make you rush.
- Bring several sharpened #2 pencils.

During the exam

- Concentrate on the test. If you find your mind wandering, take a few deep breaths to relax.
- Read each question carefully and answer the question being asked.
- Take your time and do not allow anything to make you nervous. The test is not timed.
- **The only calculator you will be allowed to use is the one on the computer. The calculator will be provided for some problems (i.e. you will not be able to use the calculator on every test question).**

Helpful Formulas

Name	Formula
Difference of Squares	$a^2 - b^2 = (a - b)(a + b)$
Perimeter of a Square	$P = 4s$ where s is the length of a side
Area of a Square	$A = s^2$ where s is the length of a side
Perimeter of a Rectangle	$P = 2L + 2W$ where $L = \text{length}$ and $W = \text{width}$
Area of a Rectangle	$A = L \times W$ where $L = \text{length}$ and $W = \text{width}$
Perimeter of a Triangle	$P = a + b + c$ where $a, b,$ and c are the sides of the triangle
Area of a Triangle	$A = \frac{1}{2} b \times h$ where $b = \text{base}$ and $h = \text{height}$
Circumference of a Circle	$C = 2\pi r$ where $r = \text{radius}$
Area of a Circle	$A = \pi r^2$ where $r = \text{radius}$
Diameter of a Circle	$D = 2r$ where $r = \text{radius}$

Perfect Squares

x	1	2	3	4	5	6	7	8	9	10	11	12
x²	1 ² =1	2 ² =4	3 ² =9	4 ² = 16	5 ² = 25	6 ² = 36	7 ² =49	8 ² =64	9 ² =81	10 ² =100	11 ² =121	12 ² =144

Five Steps for Solving Problems

1. Familiarize yourself with the problem. You may have to
 - Reread the problem aloud
 - Make a drawing and label it with the given information
 - Choose a variable to represent the unknown and clearly state what the variable represents
 - Look up useful formulas and definitions
 - Create a table that lists all the information you have available
2. Translate the problem to an equation.
3. Solve the equation.
4. Check the answer in the original problem.
5. Clearly state the answer to the problem.

Notes

Fractions

1. $\frac{2}{3} \bullet \frac{3}{4} \bullet \frac{4}{5}$

A. $\frac{1}{2}$

B. $\frac{2}{5}$

C. $\frac{5}{6}$

D. 1

2. $\frac{3}{8} + \frac{2}{5}$

A. $\frac{5}{13}$

B. $\frac{3}{20}$

C. $\frac{15}{16}$

D. $\frac{31}{40}$

3. $\frac{3}{5} \div 3 =$

A. $\frac{1}{5}$

B. $\frac{9}{5}$

C. $\frac{19}{5}$

D. $\frac{27}{5}$

4. Reduce $\frac{28}{42} =$

A. $\frac{1}{2}$

B. $\frac{2}{3}$

C. $\frac{3}{4}$

D. $\frac{7}{11}$

5. $1\frac{3}{4} \bullet 1\frac{3}{4} =$

A. 1

B. $2\frac{9}{16}$

C. $3\frac{1}{16}$

D. $3\frac{1}{2}$

6. Which of the following fractions is the largest?

A. $\frac{3}{2}$

B. $\frac{22}{25}$

C. $\frac{19}{20}$

D. $\frac{77}{77}$

7. $4\frac{1}{6} + 7\frac{11}{12} =$

A. $11\frac{1}{12}$

B. $11\frac{12}{18}$

C. $12\frac{1}{12}$

D. $12\frac{11}{12}$

8. Three people are going to donate money to a foundation for a special project. Ann will provide $\frac{1}{2}$ of the money needed and Bill will provide $\frac{1}{8}$ of the money. What fraction of the money will the third person need to donate in order for the project to be fully funded?

A. $\frac{1}{16}$

B. $\frac{3}{8}$

C. $\frac{1}{4}$

D. $\frac{5}{8}$

9. Which one of the following lists of numbers is ordered from least to greatest?

A. $\frac{-1}{3}, \frac{-3}{5}, \frac{2}{3}, \frac{3}{5}$

B. $\frac{-3}{5}, \frac{-1}{3}, \frac{3}{5}, \frac{2}{3}$

C. $\frac{-1}{3}, \frac{-3}{5}, \frac{3}{5}, \frac{2}{3}$

D. $\frac{-3}{5}, \frac{-1}{3}, \frac{2}{3}, \frac{3}{5}$

Decimals

1. Which of the following is the smallest?

A. 0.105

B. 0.501

C. 0.015

D. 0.15

2. $3.45 + 0.123 + 51.6 =$

A. 55.173

B. 56.28

C. 98.4

D. 98.473

3. $5.95 \bullet 59.7$ is slightly less than

A. 36

B. 360

C. 3,600

D. 36,000

4. $4.123 - 0.789 =$

A. 4.444

B. 3.444

C. 3.344

D. 3.334

5. The difference between 1 and 0.237 is

A. 1.237

B. 0.763

C. 0.873

D. 0.237

6. $3.45 \bullet 2.1 =$

A. 6.245

B. 7.135

C. 7.145

D. 7.245

Percents

- .3% in decimal notation is
 - 0.0003
 - 0.003
 - 0.03
 - 0.3
- What is 14% of 14?
 - 1
 - 1.96
 - 100
 - 196
- 44 is 80% of what number
 - 51
 - 53
 - 55
 - 57
- All of the following are ways to write 75 percent of P except
 - $(0.075)N$
 - $\frac{3}{4}N$
 - $\frac{75}{100}N$
 - 75N
- If 45 of 60 people like a TV show, what percent do not like the show?
 - 25%
 - 45%
 - 55%
 - 75%
- 16 is what % of 20?
 - 4%
 - 40%
 - 80%
 - 125%
- An \$80 radio is discounted 15%. How much does it cost?
 - \$12
 - \$60
 - \$68
 - \$92
- Find the cost of a \$420 TV with a 7% sales tax?
 - \$427
 - \$441
 - \$449.40
 - \$462.50

Order of Operations

1. $7 - 4 \bullet 3 - 5(-4) =$

- A. 29
- B. 15
- C. 0
- D. -14

2. $4 - |-4| + 7 - |-\frac{3}{4}| =$

- A. $-7\frac{3}{4}$
- B. $\frac{3}{4}$
- C. $6\frac{1}{4}$
- D. $15\frac{3}{4}$

3. $-3(5 - 6) - 4(2 - 3) =$

- A. -7
- B. -1
- C. 1
- D. 7

4. $54 - 6 \div 2 + 6 = ?$

- A. 6
- B. 24
- C. 27
- D. 57

5. $|7 - 2| - |2 - 7| = ?$

- A. 5
- B. 10
- C. -5
- D. 0

6. $\frac{5(4-7)+3(8)}{2(3-1)} = ?$

- A. $\frac{39}{4}$
- B. $\frac{9}{4}$
- C. $\frac{13}{2}$
- D. -1

7. $4(|-3 - 2|) - 5$

- A. 11
- B. -25
- C. 7
- D. 15

8. $\frac{4 - (-6)}{5} =$

- A. -2
- B. $-\frac{2}{5}$
- C. $\frac{2}{5}$
- D. 2

9. $\frac{1}{2} + \frac{2}{3} \div \frac{3}{4} - \frac{4}{5} \bullet \frac{5}{6} =$

- A. $\frac{1}{16}$
- B. $\frac{17}{27}$
- C. $\frac{13}{18}$
- D. $\frac{7}{9}$

10. $\frac{-3 - 2(5)}{3(-8) - 2} =$

- A. $\frac{25}{24}$
- B. $-\frac{25}{24}$
- C. $-\frac{1}{2}$
- D. $\frac{1}{2}$

11. $\frac{-4^2 - 8 \bullet 4}{-4} =$

- A. 24
- B. 12
- C. 4
- D. -8

12. $-|-3^3| =$

A. -27

B. -9

C. 9

D. 27

13. $4|-3-2|) - 5 =$

A. 7

B. 11

C. -25

D. 15

Simplifying Algebraic Expressions

1. $4x(x - 3) - 7x(5x - 4) =$

- A. $-31x^2 - 40$
- B. $-31x^2 + 16$
- C. $-31x^2 - 40x$
- D. $-31x^2 + 16x$

2. $4(2x - 7) - 2(4x - 14) =$

- A. 0
- B. $-64x^2$
- C. -56
- D. $-64x^2 - 56$

3. $-3(5 - 2y) =$

- A. $30y$
- B. $-15 - 6y$
- C. $-15 + 6y$
- D. $15 - 6y$

4. $x + 2y - 3(x - y) + 2y =$

- A. $-2x + y$
- B. $-2x + 7y$
- C. $-2x + 3y$
- D. $4x + 7y$

5. $9(x + 5) + 4(x - 2) =$

- A. $13x - 3$
- B. $5x + 38$
- C. $5x - 3$
- D. $13x + 37$

6. $7a - 2(3a - 4) =$

- A. $a + 4$
- B. $a - 4$
- C. $a + 8$
- D. $a - 8$

7. $\frac{1}{6}(12x + 18) - \frac{2}{5}(5x + 10) =$

- A. -2
- B. -1
- C. 0
- D. 1

8. $5 - (3x - 1) + 2(6x - 5) =$

- A. $9x - 4$
- B. $-9x + 4$
- C. $-9x - 4$
- D. $9x + 4$

9. $\frac{1}{2}(4x^2 + 8) - 6x^2 + 5x =$

- A. $4x^2 + 5x + 4$
- B. $-4x^2 - 5x + 4$
- C. $4x^2 - 5x - 4$
- D. $-4x^2 + 5x + 4$

10. $a + b - (2a - 3b) + (a - 2b) =$

- A. $-4b$
- B. $4a - 4b$
- C. $2b$
- D. $6b$

Evaluating Algebraic Expressions

- If $x = -3$ and $y = -10$, then $xy^2 - (xy)^2 =$
 - 0
 - 90
 - 469
 - 1,200
- If $x = -1$ and $y = 10$, the value of $3x^2 - 4xy - 2y^2 =$
 - 437
 - 237
 - 157
 - 243
- If $x = 3$, then $4x^2 + 2x - 5 = ?$
 - 145
 - 50
 - 25
 - 37
- What is the value of the expression $2x^2 + 3xy - 4y^2$ when $x = 2$ and $y = -4$
 - 80
 - 32
 - 32
 - 80
- Given $a = 2$ and $b = -3$, $2a + 3ab - b^2 = ?$
 - 31
 - 6
 - 13
 - 23
- For $b = 3$ and $h = 5$, the value of $\frac{1}{2}bh$ is
 - 15
 - 7.5
 - 30
 - 4.2
- The value of $-x^2 + 4$ when $x = -3$ is
 - 13
 - 1
 - 5
 - 1
- When $a = -2$ and $b = 2$, the value of $2ab - 3b$ is
 - 48
 - 48
 - 14
 - 14
- If $SA = 2\pi r^2 + 2\pi rh$ what is the value of SA when $r = 3$ and $h = 2$ cm?
 - 30π cm²
 - 20π cm²
 - 18π cm²
 - 14π cm²
- If $V = \pi r^2h$, what is the value of V when the $r = 3$ cm and $h = 2$ cm
 - 54 cm³
 - 36 cm³
 - 56.52 cm³
 - 18 cm³

11. If $x = -3$, what is the value of $\frac{x^2 - 1}{x + 1}$?

A. -4

B. -2

C. 2

D. 5

12. If $a = 3$, $b = 0$, and $c = -1$, then $a^{bc^a} = ?$

A. -1

B. 1

C. -27

D. 27

Solving Linear Equations

1. The solution of $2x - 5 = 7$ is

- A. $x = 1$
- B. $x = 0$
- C. $x = 6$
- D. $x = 10$

2. $\frac{4}{2}b + 3 = 11 + b$

- A. $b = 4$
- B. $b = 8$
- C. $b = 6$
- D. $b = 12$

3. $2x - 3(x + 4) = -5$

- A. -17
- B. -7
- C. 7
- D. 17

4. If $2(3x - 7) - (x - 4) = 5$ then $x = ?$

- A. 1
- B. 3
- C. $\frac{23}{6}$
- D. $\frac{23}{5}$

5. $\frac{2x-5}{3} = \frac{5x-2}{7}$

- A. -29
- B. 29
- C. 1
- D. -1

6. Solve for x : $0 = 5x + 7 + 9 + 11x$

- A. -1
- B. 0
- C. 1
- D. 2

7. Solve for x : $\frac{2x+4}{5} = \frac{5x+3}{4}$

- A. 17
- B. -17
- C. $\frac{1}{17}$
- D. $\frac{-1}{17}$

8. The solution of the equation $2x - 4(x - 3) = 3 - (-7)$ is $x = ?$

- A. 11
- B. -11
- C. 1
- D. -1

9. Solve for x : $\frac{2x-3}{5} = \frac{3x}{10}$

- A. -6
- B. $\frac{1}{3}$
- C. 6
- D. $-\frac{1}{3}$

Solving Linear Inequalities

1. Which of the following describes the solutions of the inequality $1 - 2x < 5$?

- A. $x < -2$
- B. $x > -2$
- C. $x < -3$
- D. $x > -3$

2. $4 < 2 - 6x < 10$ is equivalent to

- A. $-1 > x > -2.5$
- B. $\frac{1}{3} < x < \frac{4}{3}$
- C. $-\frac{4}{3} < x < -\frac{1}{3}$
- D. $1 < x < 2.5$

3. $40 - \frac{2}{5}x \geq 36$ is equivalent to

- A. $x \geq 10$
- B. $x \leq 10$
- C. $x \geq 100$
- D. $x \leq 100$

4. Which of the following is equivalent to $9 - \frac{1}{2}x < 4$?

- A. $x > 5$
- B. $x < 5$
- C. $x > 10$
- D. $x < 10$

5. The values of y satisfying $5 - 9y \leq 2 - 8y$ are

- A. $y \geq 3$
- B. $y \leq 3$
- C. $y \leq -3$
- D. $y \geq -3$

6. Which expression describes all values of t that satisfy the inequality $12 < 2t - 6$?

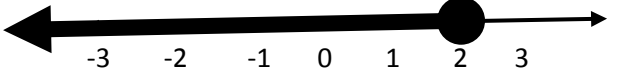
- A. $t < 9$
- B. $t > 9$
- C. $t > 6$
- D. $t < 6$

7. $\frac{x}{3} \geq 2 + \frac{x}{6}$ is equivalent to

- A. $x \leq 12$
- B. $x \geq 12$
- C. $x \leq -12$
- D. $x \geq -12$

8. $-3 < -4x + 1 < 13$ is equivalent to

- A. $-3 < x < 1$
- B. $-3 < x < -1$
- C. $1 < x < 3$
- D. $-1 < x < 3$

9. 

The solution set of which of the following inequalities is graphed on the number line above?

- A. $2x - 4 \geq -3$
- B. $2x + 5 \leq 6$
- C. $3x - 1 \leq 5$
- D. $4x - 1 \geq 7$

10. $4 > z < 3$

- A. $z = 2$
- B. $z = 3.5$
- C. $z = 5$
- D. $z = 7$

Solving Formulas and Literal Equations

- If $a - b + x = 0$, $x =$
 - $a - b$
 - ab
 - $b - a$
 - $a + b$
- If $ax + b + c = p$, then $x =$
 - $p - b - c - a$
 - $p - b - \frac{c}{a}$
 - $\frac{p - b - c}{a}$
 - $p - b - c + a$
- If for all a and k , $x + a - k = 0$, then $x =$
 - $k - a$
 - $a - k$
 - $a + k$
 - $-a - k$
- If $ax - b = c$, then $x =$
 - $b + c - a$
 - $c - b - a$
 - $\frac{b - c}{a}$
 - $\frac{b + c}{a}$
- Solve $P = 2L + 2W$ for L
 - $L = \frac{P - 2W}{2}$
 - $L = P - 2W - 2$
 - $L = P + 2W + 2$
 - $L = \frac{P + 2W}{2}$
- Solve $px = c + ax$ for x
 - $x = c + ax - p$
 - $px - ax = c$
 - $x = \frac{c}{p - a}$
 - $x = \frac{c + ax}{p}$
- Solve for x ,
 $xy - 2y^2 + 5y = 4$
 - $x = 2y^2 - 5 + 4y$
 - $x = 3y^2$
 - $x = 2y + \frac{4}{y} - 5$
 - $x = y - \frac{4}{y} + 5$

Systems of Linear Equations

1. $2x + 6y = 5$
 $x + 3y = 2$

How many solutions (x, y) are there to the system of equations above?

- A. None
- B. One
- C. Two
- D. More than two

2. If $x = y + 3$ and $y = z + 7$,
 x (in terms of z) =

- A. $z - 10$
- B. $z - 4$
- C. $z + 4$
- D. $z + 10$

3. In the solution to the system of equations

$$x + 3y = 19$$
$$x - y = -1,$$

the value of x is

- A. 4
- B. 3
- C. $\frac{9}{2}$
- D. 5

4. Find $x + y$:

$$7x + 4y = 27$$
$$x - 2y = -3$$

- A. 1
- B. 3
- C. 5
- D. 7

5. What is the value of y in the solution of the system of equations below?

$$x + 3y = 4$$
$$2x - 2y = 1$$

A. $\frac{11}{8}$

B. $\frac{7}{8}$

C. $\frac{-7}{8}$

D. $\frac{-11}{8}$

6. Two apples and 3 pears cost 65 cents, and 5 apples and 4 pears cost \$1.10. Find the cost, in cents, of one pear and one apple.

A. 25

B. 20

C. 15

D. 10

7. For lunch, Ed buys 3 hamburgers and 1 soda for \$12.50, and Mya buys 1 hamburger and 1 soda for \$5.60. How much does Ed pay for his hamburgers?

A. \$10.35

B. \$6.90

C. \$3.45

D. \$2.15

8. In one school, 5% of the student body is made up of seniors. There is a total of 9 juniors and seniors in the class. There are 5 more juniors than seniors. How many students are in the school?

A. 120

B. 130

C. 140

D. 150

Laws of Exponents

- If $x = -2$ and $y = -3$ evaluate the following expression: $(x + 4)^{y-2}$
 - 32
 - $\frac{1}{32}$
 - 10
 - 32
- Which of the expressions below is equivalent to $3^3 + 3^2 + 3 = ?$
 - 34
 - $2^5 + 2^2$
 - $5^2 + 4^2 - 2$
 - $7^2 - 5^2 + 14$
- $(5ab^3c^9)^3 =$
 - $15ab^9c^{27}$
 - $125ab^9c^{27}$
 - $125a^3b^9c^{27}$
 - $125ab^{27}c^{729}$
- $64x^{12}\left(\frac{2x^{20}}{16x^{16}}\right) =$
 - $8x^{16}$
 - $8x^2$
 - $\frac{3x^2}{2}$
 - $8x^{48}$
- $\frac{x^6x^9y^8}{x^5y^2} =$
 - x^3y^6
 - x^5y^6
 - $x^{10}y^6$
 - xy^4
- $\frac{6x^{20} + 8x^{12} + 2x^2}{2x^2} =$
 - $3x^{10} + 4x^6$
 - $3x^{10} + 4x^6$
 - $3x^{18} + 4x^{10}$
 - $3x^{18} + 4x^{10} + 1$
- $\frac{x^4y^3}{x^6y^2} =$
 - x^2y
 - $\frac{x^2}{y}$
 - xy^2
 - $\frac{y}{x^2}$
- $(3x^3)^2 =$
 - $6x^6$
 - $9x^9$
 - $6x^9$
 - $9x^6$
- $(2x^5y^2)(3x^2y) =$
 - $6x^7y^3$
 - $6x^7y^2$
 - $6x^{10}y^2$
 - $5x^{10}y^2$
- $\frac{10x^6 + 8x^4}{2x^2} =$
 - $9x^{12}$
 - $14x^4$
 - $5x^4 + 4x^2$
 - $5x^3 + 4x^2$

11. $\frac{6x^4y^3+4x^3y^5+2x^2y^2}{xy} =$

A. $6x^4y^3 + 4x^3y^5 + 2x^2y^2$

B. $6x^3y^2 + 4x^2y^4 + 2xy$

C. $5x^4y^3 + 3x^3y^5 + x^2y^2$

D. $5x^3y^2 + 3x^2y^4 + xy$

12. $\frac{30a^3b^4}{50a^4b^2} =$

A. $\frac{3a^3b^4}{5a^4b^2}$

B. $\frac{30a^{-1}b^2}{50}$

C. $\frac{3b^2}{5a}$

D. $\frac{3a^7b^6}{5}$

Multiplying Binomials

- $(4x - 5y)^2 =$
 - $16x^2 + 25y^2$
 - $16x^2 - 25y^2$
 - $16x^2 - 20xy + 25y^2$
 - $16x^2 - 40xy + 25y^2$
- $(abc - 6)^2 =$
 - $a^2b^2c^2 - 36$
 - $a^2b^2c^2 + 36$
 - $a^2b^2c^2 + 36abc + 36$
 - $a^2b^2c^2 - 12abc + 36$
- $2x(3x - 4)(5x + 6) =$
 - $30x^3 - 2x - 24x$
 - $30x^3 - 4x^2 - 48x$
 - $30x^3 + 4x^2 - 48x$
 - $30x^3 - 76x - 48x$
- $(x + 5)(2x + 3) =$
 - $2x^2 + 13x + 15$
 - $3x + 8$
 - $2x^2 + 10x + 15$
 - $x^2 + 13x + 8$
- The sum of the coefficients of $(2x - 1)^2 =$
 - 1
 - 9
 - 3
 - 5
- $(3x - 2)^2 =$
 - $9x^2 + 12x + 4$
 - $9x^2 - 12x + 4$
 - $9x^2 + 4$
 - $9x^2 - 4$
- $(x - 2)(3 - x) =$
 - 6
 - $-x^2 - 6$
 - $-x^2 + 5x - 6$
 - $x^2 - 5x + 6$
- $(3x - 4y)^2 =$
 - $9x^2 - 16y^2$
 - $9x^2 + 16y^2$
 - $9x^2 - 24xy + 16y^2$
 - $9x^2 + 24xy + 16y^2$
- $(x - 3)^2$
 - $x^2 + 9$
 - $x^2 - 9$
 - $x^2 - 6x - 9$
 - $x^2 - 6x + 9$

Factoring Binomials and Trinomials

- Factor completely $4x^2 - 10x + 6$.
 - $(4x - 6)(x - 1)$
 - $2(2x^2 - 5x + 3)$
 - $2(2x - 1)(x - 3)$
 - $2(2x - 3)(x - 1)$
- Factor completely $3x^3 - 27x$.
 - $3x(x^2 - 9)$
 - $3x(x - 3)^2$
 - $x(3x - 3)(x + 3)$
 - $3x(x - 3)(x + 3)$
- Which of the following equals $x^2 - 5x + 6$?
 - $(x - 2)(x - 3)$
 - $(x + 2)(x + 3)$
 - $(x - 2)(x + 3)$
 - $(x + 2)(x - 3)$
- Which of the following is a factor of both $x^2 - x - 6$ and $x^2 - 5x + 6$?
 - $x - 3$
 - $x - 2$
 - $x + 2$
 - $x + 3$
- Which is the complete factorization of $5y^3 - 125y$?
 - $y(5y^2 - 125)$
 - $5y(y^2 - 25)$
 - $5y^2(y - 25)$
 - $5y(y + 5)(y - 5)$
- $16 - 9x^2$
 - $(4 + 3x)^2$
 - $(4 - 3x)^2$
 - $(4 + 3x)(4 - 3x)$
 - $(4 + 9x)(4 - 9x)$
- One of the factors of $6x^2 - x - 12$ is
 - $(2x + 3)$
 - $(2x - 3)$
 - $(3x - 4)$
 - $(x - 3)$
- Which of the following is a factor of $4x^2 + 22x - 42$?
 - $(2x + 3)$
 - $(x - 7)$
 - $(2x - 3)$
 - $(2x + 7)$
- Which one is **not** a factor of $2x^2 - 4x - 6$?
 - $x + 3$
 - 2
 - $x - 3$
 - $x + 1$

Quadratic Equations

- The solution(s) of $x^2 + 16 = 8x$ is(are)
 $x =$
 - 4 or -4
 - 4
 - 4
 - 2
- For which of the following equations are $x = 5$ and $x = -5$ both solutions?
 - $x^2 - 25 = 0$
 - $x^2 + 25 = 0$
 - $x^2 + 10x - 25 = 0$
 - $x^2 - 5x - 25 = 0$
- The solutions of $y^2 - 3y - 28 = 0$ are $y =$
 - 7 or 4
 - 7 or -4
 - 2 or -14
 - 2 or 14
- For which of the following equations are $x = -6$ and $x = 8$ both solutions?
 - $x^2 - 2x - 48 = 0$
 - $x^2 - 2x + 48 = 0$
 - $x^2 + 2x - 48 = 0$
 - $x^2 + 2x + 48 = 0$
- What is the sum of the solutions of the equation $2x^2 - x = 15$?
 - $\frac{1}{2}$
 - $-\frac{1}{2}$
 - $-\frac{11}{2}$
 - $\frac{11}{2}$
- What is the smaller of the two solutions to the equation $2x^2 + 5x = 3$?
 - $\frac{1}{2}$
 - 3
 - $-\frac{1}{2}$
 - 3
- If $x = 6$ and $x = -9$ are the solutions to a quadratic equation, the original quadratic equation is
 - $x^2 + 3x - 54 = 0$
 - $x^2 - 3x - 54 = 0$
 - $x^2 + 15x - 54 = 0$
 - $x^2 - 15x - 54 = 0$

Rational Expressions

1. If $x \neq 0$, then $\frac{u}{x} + \frac{5u}{x} - \frac{u}{5x} =$

A. $\frac{7x}{5u}$

B. $\frac{5u}{7x}$

C. $\frac{29u}{5x}$

D. $\frac{31u}{5x}$

2. If $x > 2$, then $\frac{x^2 - x - 6}{x^2 - 4} =$

A. $\frac{x-3}{2}$

B. $\frac{x-3}{x-2}$

C. $\frac{x-3}{x+2}$

D. $\frac{3}{2}$

3. If $x > 100$, $\frac{x^2 - 2x - 8}{x^2 - 4x} =$

A. $1 - \frac{2}{x}$

B. $\frac{x-4}{x+2}$

C. $\frac{x+2}{x}$

D. $\frac{1}{2} - \frac{2}{x}$

4. $\frac{4x^2 - 9}{4x^2 + 16x + 15} =$

A. $\frac{-9}{x+25}$

B. $\frac{2x-3}{2x+3}$

C. $\frac{2x-3}{2x+5}$

D. Cannot be reduced

5. $\frac{9 - x^2}{(x - 3)^2} =$

A. $\frac{x+3}{x-3}$

B. $\frac{x+3}{3-x}$

C. $\frac{-1}{6x}$

D. 1

6. $\frac{4 - t^2}{t^2 - 4t + 4} =$

A. $\frac{1}{t-2}$

B. $\frac{-1}{t-2}$

C. $-\frac{2+t}{t-2}$

D. $\frac{-1}{4t}$

7. For $x \neq 0$, $3 + \frac{4}{x} =$

A. $\frac{7}{x}$

B. $\frac{3x+4}{x}$

C. $\frac{7}{1+x}$

D. $\frac{4}{3+x}$

8. For x and $y \neq 0$, $\frac{x^3}{5y^2} \cdot \frac{10y^5}{2x^6} =$

A. $\frac{y^3}{x^3}$

B. $\frac{x^3}{y^3}$

C. $\frac{10x^9}{7y^9}$

D. $\frac{y^8}{x^8}$

9. Solve $\frac{p}{x} + a = \frac{c}{k}$ for x .

A. $x = -p - a + \frac{c}{k}$

B. $x = \frac{pk}{c-ak}$

C. $a = \frac{p}{x} + \frac{c}{k}$

D. $x = \frac{pc}{ak}$

10. If Tara earned $\frac{x+y}{y}$ dollars, Jason earned $\frac{x}{y}$ dollars, and TJ earned $\frac{2}{3}$ of Tara's earnings, which expression tells how much they earned in total?

A. $\frac{x+y+x+2}{y+y+3}$

B. $x + \frac{x}{y} + \frac{2}{3}$

C. $\frac{2x(x+y)}{3y^2}$

D. $\frac{8x+5y}{3y}$

Radicals and Rational Exponents

- $9^{3/2} =$
 - $\frac{21}{2}$
 - $\frac{27}{2}$
 - 9
 - 27
- $(-27)^{2/3} =$
 - 9
 - 9
 - 18
 - 18
- $\sqrt{6} \cdot \sqrt{10} =$
 - 60
 - 14
 - 4
 - $2\sqrt{15}$
- $25^{3/2} =$
 - 125
 - $37\frac{1}{2}$
 - 5
 - $\sqrt[3]{25^2}$
- $(2\sqrt{3} + 3\sqrt{2})^2 =$
 - 30
 - $30 + 6\sqrt{6}$
 - $30 + 12\sqrt{6}$
 - 66
- $(27x^6y^3)^{1/3} =$
 - $9x^2y$
 - $3x^2y$
 - $9x^2$
 - $3y$
- $2\sqrt{8} \cdot 3\sqrt{6} =$
 - $6\sqrt{14}$
 - $12\sqrt{18}$
 - $24\sqrt{3}$
 - 72
- $2\sqrt{27} + 3\sqrt{12} =$
 - $5\sqrt{39}$
 - $12\sqrt{3}$
 - $6\sqrt{324}$
 - 36
- $(\sqrt{12} + \sqrt{27})^2 =$
 - 15
 - 39
 - 75
 - 225
- $\sqrt{2} \cdot \sqrt{15} =$
 - $\sqrt{17}$
 - $\sqrt{30}$
 - 17
 - 30
- $\sqrt{12} \cdot \sqrt{3} =$
 - $\sqrt{15}$
 - 18
 - 3
 - 6
- $(-8)^{2/3} =$
 - $\frac{16}{3}$
 - $-\frac{16}{3}$
 - 4
 - 4

Word Problems - Translating from words to algebraic expressions

- Write in symbols: The product of 4 and the quantity x less 6 is the same as 7 less than x .
 - $4(6 - x) = x - 7$
 - $4(x - 6) = x - 7$
 - $4x - 6 = 7 - x$
 - $4x - 6 = x - 7$
- An apple cost 45 cents and a pear cost 55 cents. The total cost in cents of x apples and y pears is
 - $475xy$
 - $45x + 55y$
 - $45y + 55x$
 - $50(x + y)$
- Children's tickets C cost \$5.00 each; senior tickets S cost \$7.00 each; and adult tickets A cost \$10.00 each. In order for the concert to make a profit, the amount sold must be at least \$10,000. This expression can be written as:
 - $350CSA > 10,000$
 - $350CSA \geq 10,000$
 - $5C + 7S + 10A > 10,000$
 - $5C + 7S + 10A \geq 10,000$
- Joe's current age is five times Mary's age 10 years ago. If Mary is currently m years old, what is Joe's current age in terms of m ?
 - $5m$
 - $5m - 10$
 - $5m - 50$
 - $5m + (m - 10)$
- Sarah's age is 5 more than twice Adam's age. Letting $a =$ Adam's age, what is the sum of their ages?
 - $5 + a$
 - $5 + 2a$
 - $5 + 3a$
 - $7a$
- Kim bought x apples at 55 cents each and y pears at 45 cents each. Her change in cents from a ten dollar bill can be expressed as
 - $1000 - 55x + 45y$
 - $1000 - 55x - 45y$
 - $1000 - (55x - 45y)$
 - $10000 - 2425xy$
- On Monday, it took Helene 3 hours to do a page of science homework exercises. The next day she did the same number of exercises in 2 hours. If her average rate on Monday was p exercises per hour (e/h), what was her average rate the next day, in terms of p ?
 - $2(p + 1) e/h$
 - $3(p - 1) e/h$
 - $\frac{2}{3}p e/h$
 - $\frac{3}{2}p e/h$

Word Problems

1. John does $\frac{1}{7}$ of a job, Bill does $\frac{1}{6}$ of the job, and Sam does twice as much as Bill and John together. How much of the job remains to be done?

A. $\frac{1}{14}$

B. $\frac{1}{7}$

C. $\frac{1}{6}$

D. $\frac{1}{3}$

2. If 10 dimes and 5 nickels are to be divided among 5 people. How much will each one get in cents.

A. 10 cents

B. 15 cents

C. 20 cents

D. 25 cents

3. Matthew walks 30 yards in 15 minutes. If he walks for 7 more minutes, how many additional yards will he walk?

A. 14 yards

B. 21 yards

C. 30 yards

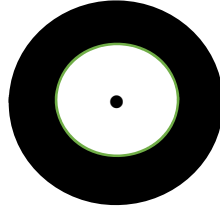
D. 44 yards

Word Problems – Geometry

1. A rectangular yard has area 96 ft^2 . If the width of the yard is 4 feet less than the length, what is the perimeter, in feet, of the yard?

A. 40 B. 44 C. 48 D. 52

2. In the figure below, both circles have the same center, and the radius of the larger circle is R . If the radius of the smaller circle is 3 units less than R , which of the expressions represents the area of the shaded region?



A. πR^2 B. $\pi(R - 3)^2$ C. $\pi R^2 - \pi \cdot 3^2$ D. $\pi R^2 - \pi(R - 3)^2$

3. The radius of a circle is $p - 5$. What is the area of the circle

A. $p - 5$ B. $(p - 5)^2$ C. $(p^2 - 10p + 25)\pi$ D. $2\pi(p - 5)^2$

4. $V = \pi r^2 h$ is the volume of a cylinder. If the height is tripled and the radius is quadrupled (multiplied by 4), the volume is multiplied by _____?

A. 7 B. 12 C. 48 D. 144

5. The area of an equilateral triangle (all sides are equal) is given by $s^2 \frac{\sqrt{3}}{4}$. If the area is $100\sqrt{3}$ then the side $s = ?$

A. 10 B. 20 C. 40 D. $10\sqrt{3}$

6. The volume of a cone is $\frac{1}{3}\pi r^2 h$. If the diameter $d = 10$ and height $h = 12$, the volume is

A. 400π B. 200π C. 100π D. 50π

7. The area of a trapezoid $A = \frac{1}{2}h(b_1 + b_2)$. Suppose the area is 100, $h = 8$, and $b_1 = 7$. Find b_2 .

A. 14 B. 16 C. 18 D. 20

8. The volume of a right circular cylinder is given by $V = \pi r^2 h$ where h is the height of the cylinder and r is the radius of the base. If the height of a cylinder is 4 inches and the diameter of the base is 6 inches, what is the volume of the cylinder?

A. 36π B. 24π C. 48π D. 96π

9. The length of a rectangle is 12 feet. The width is one more than half the length. What is the area of the rectangle in square feet?

A. 38 B. 60 C. 72 D. 84

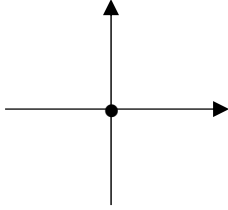
10. In triangle ABC, the measure of angle A is x , the measure of angle B is $x + 60^\circ$, and the measure of angle C is $2x$. What is the measure of angle A?

A. 30° B. 60° C. 75° D. 90°

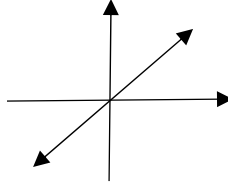
Graphing

1. What is the graph of $x + y = 0$?

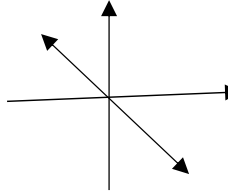
A.



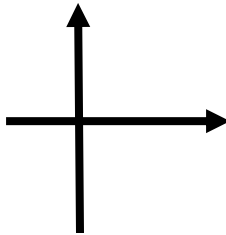
B.



C.



D.



2. If $f(x) = 300(2^x)$ then which ordered pair is a solution?

A. (0, 0)

B. (1, 200)

C. (2, 400)

D. (3, 2400)