The ACCUPLACER is an assessment test that assesses your level of skill and readiness for a certain educational course path. At Ivy Tech Community College, the ACCUPLACER is used to determine your level of readiness for college-level course in the areas of English and Math. You may use this study guide to study for the test. You can also Google: ACCUPLACER online sample questions for additional help.

General Test Taking Tips:

1. Relax! The ACCUPLACER was designed to help you succeed in school. Your score helps you and your advisor to determine which courses are most appropriate for your current level of knowledge and skills.

2. The exam begins with elementary algebra, then branches to either arithmetic or college level math based on previous answers.

3. Carefully read all test questions and instructions.

4. The ACCUPLACER is a multiple choice test. Eliminate the choices that you know are incorrect first, then attempt to find and choose the correct answer.

5. If you are unsure of the answer, make an educated guess. Usually your first choice is the right one. Don’t second guess yourself.

6. Utilize materials given during the test such as scratch paper. Scratch paper is provided and will be collected at the end of the assessment.

7. Approach the test with a positive attitude.

8. Get plenty of rest and eat properly prior to testing. You should give yourself some time to find the testing area, bathrooms, etc. and to gather your thoughts before the test begins.
Elementary Algebra

Accuplacer Assessment Skills Practice Exam

Overview
The Elementary Algebra sections of the ACCUPLACER contains 12 multiple choice Algebra questions. A calculator is provided by the computer on questions where its use would be beneficial. On other questions, solving the problem using scratch paper may be necessary. Expect to see the following concepts covered on this portion of the test.

- Understanding a number line
- Add, subtract, multiply, and divide negative numbers
- Exponents
- Square roots
- Order of Operations
- Understanding algebraic terms and expressions
- Simplifying algebraic expressions
- Combining like terms
- Absolute Value
- Solving linear equations
- Using proportions to solve problems
- Multiplying binomials
- Evaluating formulas
- Solving equations

Practice Questions

Order of Operations
Evaluate:
1) \( 3 \cdot 7^2 \)  
2) \( 3 + 2(5) - | -7 | \)  
3) \( \frac{4^2 - 5^2}{(4-5)^2} \)

Simplify:
4) \( 3(2x + 2) + 3 \cdot 5 - x \)  
5) \( |-4x| + |-4^2| - 10x \)  
6) \( 2(x - 3) - 5(3x - 4) \)
Scientific Notation
Convert the following expanded form to scientific notation.

7) 0.000000000000523

Convert the following scientific notation to expanded form.

8) 6.02 x 10⁹

Simplify. Write answers in scientific notation.

9) (3 x 10⁴) (5 x 10⁶)
10) \( \frac{6 \times 10^9}{3 \times 10^4} \)

Substitution
Find each value if \( x = 3 \), \( y = -4 \), and \( z = 2 \)

11) \( xyz - 4z \)
12) \( \frac{5x - z}{xy} \)

Operations with Negative Numbers
Evaluate:

13) 14 + (-20)
14) -17 - 32
15) -22 - (-32)

16) -15 + 27
17) (-3)(6)
18) 7(-6)

Exponents
Evaluate:

19) \( 7^2 \)
20) \( 14^0 \)

21) \( 15^1 \)
22) \( 2^5 \)

Simplify:

23) \( x^2 \cdot x^3 \cdot x \cdot x^4 \)
24) \( x \cdot y^3 \cdot x^3 \cdot y \cdot x^6 \cdot y^5 \)

Formulas

25) Solve \( PV = nRT \) for \( T \).
26) Solve \( y = hx + 4x \) for \( x \).
**Word Problems**

27) One number is 5 more than twice another number. The sum of the numbers is 35. Find the numbers.

28) Tim was twice Bill’s age in the year 2000. Their combined age in 2010 is 71. How old were Tim and Bill in 2000?

**Inequalities**

Solve and graph on the number line.

29) \(-2x - 7 \geq 3\)  

30) \(3(x - 4) - (x + 1) > -12\)

**Linear Equations in One Variable**

Solve the following for \(x\):

31) \(6x - 48 = 6\)  

32) \(50 - x - (3x + 2) = 0\)

33) \(3(3x + 4) - 2(6x - 2) = 22\)  

34) \(x^2 = 4\)

**Multiplying Binomials**

Simplify the following:

35) \((x + 5)(x + 7)\)  

36) \((2x - 3)(-4x + 2)\)

37) \((6x + 6)(4x - 7)\)  

38) \((-3x - 8)(-2x + 9)\)

**Factoring**

Factor the following polynomials:

39) \(x^2 - 5x - 6\)  

40) \(64x^4 - 4y^4\)

41) \(4x^2 - 36\)  

42) \(49y^2 + 84y + 36\)
Exponents and Polynomials

Simplify and write with only POSITIVE exponents:

43) \((3x^2 - 5x - 6) + (5x^2 + 4x + 4)\)

44) \(\frac{24x^4 - 32x^3 + 16x^2}{8x^2}\)

45) \((5a + 6)^2\)

46) \(\frac{4x^3 \cdot 3x^2 \cdot x^5}{2x^5 \cdot 3x^{-3}}\)

47) \(\frac{15x^{-2}}{5x^5}\)

Quadratic Equations

Solve for the variable, which will have two solutions:

48) \(4a^2 + 9a + 2 = 0\)

49) \((3x + 2)^2 = 16\)

Rational Expressions

Perform the following operations and simplify where possible. If given an equation, solve for the variable.

50) \(\frac{4}{2a - 2} + \frac{3a}{a^2 - a} = 5\)

51) \(\frac{16 - x^2}{x^2 + 2x - 8} \div \frac{x^2 - 2x - 8}{4 - x^2}\)

Graphing Linear Equations in Two Variables

Graph the solution to each equation on the \((x, y)\) coordinate axis, also known as a Cartesian Graph.

52) \(3x - 2y = 6\)

53) \(y = -3\)

54) \(x = 4\)

55) \(y = -\frac{2x}{3} + 5\)
Systems of Equations
Solve the following systems of equations.

56) \[2x - 3y = -12\]
    \[x - 2y = -9\]

57) \[2x - 3y = -4\]
    \[y = -2x + 4\]

Square Roots and Radicals
Simplify.

58) \[\sqrt{49}\]
59) \[\sqrt{121}\]

Simplify the following radical expressions.

60) \[(\sqrt{3})(\sqrt{10})\]
61) \[2\sqrt{18} - 5\sqrt{32} + 7\sqrt{162}\]

62) \[\sqrt{\frac{12}{18}} \cdot \sqrt{\frac{15}{40}}\]
63) \[(2\sqrt{3} + 5\sqrt{2})(3\sqrt{3} - 4\sqrt{2})\]
### Answers

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<td>1</td>
<td>147</td>
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<td>4</td>
<td>5x + 21</td>
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<td>7</td>
<td>5.23 \times 10^{-13}</td>
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<td>2 \times 10^5</td>
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<td>25</td>
<td>T = \frac{PV}{nR}</td>
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<td>28</td>
<td>Bill was 17, Tim was 34</td>
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<td>31</td>
<td>x = 9</td>
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<td>x = -2, 2</td>
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<td>37</td>
<td>24x^2 - 18x - 42</td>
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<td>40</td>
<td>4(2x + y)(2x - y)(4x^2 + y^2)</td>
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<td>43</td>
<td>8x^2 - x - 2</td>
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<td>46</td>
<td>2x^4</td>
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<td>61</td>
<td>49\sqrt{2}</td>
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Arithmetic

Accuplacer Assessment Skills Practice Exam

Overview
Contains 17 questions and calculator is provided by the computer on questions where its use would be beneficial. Expect to see the following concepts covered on this portion of the test:
- Decimals
- Fractions
- Exponents, Order of Operations, Integers
- Ratios, Proportions, and Percents
- Expressions, Equations, Inequalities

Practice Exam

Solve the following problems and select your answer from the choices given.

1) Add: 3.12 + .004 + 0.27
   a) 0.586  b) 3.394  c) 0.0000003394  d) 5.84

2) Add: $2\frac{1}{2} + 4\frac{2}{3}$
   a) $6\frac{1}{6}$  b) $6\frac{5}{6}$  c) $7\frac{1}{6}$  d) $7\frac{5}{6}$

3) $\frac{9}{25} =$
   a) 9%  b) 25%  c) 3.6%  d) 36%

4) Which number is smallest?
   a) 0.7  b) 0.82  c) 0.672  d) 0.223

5) Round 693.8567 to the nearest tenth.
   a) 690.0  b) 693.9  c) 693.85  d) 693.858

6) Which one of the following is the closest estimate to $35.8 \times 0.9$?
   a) 360  b) 36  c) 3.6  d) 0.36
7) Three of four numbers have a sum of 22. The average of the four numbers is 8, what is the fourth number?
   a) 4  
   b) 6  
   c) 8  
   d) 10

8) The budget allows for three people to complete a job. One person is budgeted for one-fifth the time to complete the job and a second person is budgeted for one-sixth the time to complete the job, how much time should the third person be budgeted for, if all three people work together?
   a) $\frac{1}{30}$  
   b) $\frac{11}{30}$  
   c) $\frac{19}{30}$  
   d) $\frac{19}{60}$

9) 12 is 75% of what number?
   a) 1.6  
   b) 160  
   c) 8  
   d) 16

10) $\sqrt{35}$ is between which two whole numbers?
    a) 3 and 4  
    b) 4 and 5  
    c) 5 and 6  
    d) 6 and 7

11) Find $4^3$.
    a) 12  
    b) 64  
    c) 15  
    d) 81

12) A man owed $2365 on his car. After making 35 payments of $67 each, how much did he have left to pay?
    a) $2345  
    b) $200  
    c) $2263  
    d) $20

13) Write the $\frac{3}{125}$ as a decimal.
    a) 0.024  
    b) 0.24  
    c) 2.4  
    d) 24

14) Subtract: $12\frac{7}{12} - 5\frac{1}{5}$
    a) $6\frac{13}{20}$  
    b) $7\frac{23}{60}$  
    c) $17\frac{47}{60}$  
    d) $7\frac{6}{7}$

15) What percent of 20 is 25?
    a) 1.25 %  
    b) 12.5 %  
    c) 125 %  
    d) 80%

16) 45 % of 300 is what?
    a) 135  
    b) 15  
    c) 667  
    d) 98

17) A 127.42 acre area of rain forest is beginning to be cut down. So far, 82.5 acres have been removed. How many acres of this area of rain forest are left?
    a) 209.92  
    b) 44.29  
    c) 44.92  
    d) 1.5

18) If $\frac{3}{2} \div \frac{1}{4} = n$, then $n$ is between
    a) 1 and 3  
    b) 3 and 5  
    c) 5 and 7  
    d) 7 and 9
19) $7.86 \times 4.6$
   a) 36.156  
   b) 36.216  
   c) 351.56  
   d) 361.56

20) A soccer team played 160 games and won 65 percent of them. How many games did the team win?
   a) 94  
   b) 104  
   c) 114  
   d) 124

21) $46.2 \times 10^{-2}$
   a) 0.0462  
   b) 0.462  
   c) 4.62  
   d) 462

22) The measure of two angles of a triangle are $35^\circ$ and $45^\circ$. What is the measure of the third angle of the triangle?
   a) $95^\circ$  
   b) $100^\circ$  
   c) $105^\circ$  
   d) $110^\circ$

23) Multiply: $1 \frac{4}{5} \cdot 2 \frac{1}{3}$
   a) $4 \frac{4}{5}$  
   b) $\frac{27}{35}$  
   c) $3 \frac{3}{5}$  
   d) $2 \frac{4}{15}$

Answers:
1) B  
2) C  
3) D  
4) D  
5) B  
6) B  
7) D  
8) C  
9) D  
10) C  
11) B  
12) D  
13) A  
14) B  
15) C  
16) A  
17) C  
18) C  
19) A  
20) B  
21) B  
22) B  
23) A
College Level Math

Accuplacer Assessment Skills Practice Exam

Overview

Contains 20 questions and test assesses skills from intermediate algebra through pre-calculus.

Expect to see the following concepts covered on this portion of the test:

• Algebraic operations
• Solutions of equations and inequalities
• Coordinate geometry
• Functions and trigonometry
• Applications and other algebra topics ask about complex numbers, series and sequences, determinants, permutations and combinations, fractions, and word problems.

Practice Exam

Solve the following problems and select your answer from the choices given.

1) \( \frac{5}{2^2} \cdot \frac{3}{2^2} \)
   a) \( 2^1 \)          b) \( 2^0 \)          c) \( 2^4 \)          d) \( 2^2 \)

2) If \( a \neq b \) and \( \frac{1}{x} + \frac{1}{a} = \frac{1}{b} \), then \( x = \)
   a) \( \frac{1}{a} - \frac{1}{b} \)                     b) \( a - b \)                     c) \( \frac{1}{ab} \)                     d) \( \frac{ab}{a-b} \)

3) If \( 4x^2 + 28x + 49 = 0 \), then \( (x + \frac{1}{2})^2 = \)
   a) \( -9 \)                   b) \( \frac{7}{2} \)                   c) \( -\frac{7}{2} \)                   d) \( 4 \)
4) The graph of which of the following equations is a straight line parallel to the graph $y = 2x$?
   a) $4x - y = 4$  b) $2x - 2y = 2$  c) $2x - y = 4$  d) $2x + y = 2$

5) An equation of the line that contains the origin and the point $(1,2)$ is
   a) $y = 2x$  b) $2y = x$  c) $y = x - 1$  d) $y = 2x + 1$

6) An apartment building contains 12 units consisting of one and two bedroom apartments that rent for $360 and $450 per month, respectively. When all units are renter, the total monthly rental is $4950. What is the number of two bedroom apartments?
   a) 4  b) 5  c) 6  d) 7

7) If $\log_{10} x = 3$, then $x =$
   a) $3^{10}$  b) 1000  c) 30  d) $\frac{10}{3}$

8) If $f(x) = 2x + 1$ and $g(x) = \frac{x - 1}{2}$, then $f(g(x)) =$
   a) $x$  b) $\frac{x - 1}{4x + 2}$  c) $\frac{4x + 2}{x - 1}$  d) $\frac{5x + 1}{2}$

9) If $\theta$ is an acute angle and $\sin \theta = -\frac{1}{2}$, then $\cos \theta =$
   a) -1  b) 0  c) $\frac{1}{2}$  d) $\frac{\sqrt{3}}{2}$

10) $5y(2y - 3) + (2y - 3) =$
    a) $(5y + 1)(2y + 3)$  b) $(5y + 1)(2y - 3)$
    c) $(5y - 1)(2y + 3)$  d) $(5y - 1)(2y - 3)$

11) For what real numbers $x$ is $x^2 - 6x + 9$ negative?
    a) $x < -3$ or $x > 3$  b) $0 < x < 6$  c) No real numbers
Answers:
  1) C
  2) D
  3) A
  4) C
  5) A
  6) D
  7) B
  8) A
  9) D
  10) B
  11) C