

Studying for the Math Placement Exam

The following is meant as a study guide for those preparing to take the arithmetic and algebra portions of the mathematics department's placement exam. The test objectives are listed below along with examples to clarify each objective. In addition, after each objective are page numbers that correlate with the following book:

**Cliffs Notes: Math Review for Standardized Tests by Jerry Bobrow
(ISBN:0-8220-2033-5)**

The book costs \$10.99 and is available at McKenny Union. You'll find explanations, additional practice problems, and practice tests in this book. The page numbers after each objective will direct you to examples and additional problems for each objective.

Test Objectives: Arithmetic Test

1. Add, subtract, multiply and divide fractions (p. 34-46)

Example 1) $5\frac{2}{3} + 4\frac{3}{4}$

Example 2) $4\frac{1}{5} \times \frac{1}{3}$

Example 3) $6\frac{1}{3} - 3\frac{3}{5}$

2. Add, subtract multiply and divide decimals (p. 50-52)

Example 4) $0.8 \overline{)318}$

Example 5) $(.3)^2$

3. Change fractions to decimals (p. 51-52)

Example 6) Change each fraction to a decimal: $\frac{3}{10}$, $\frac{3}{8}$

Example 7) Change each decimal to a fraction: 0.02 , 0.85

4. Percents (p. 52-60)

Example 8) What is 20% of 90?

Example 9) 18 is what percent of 45?

Example 10) 70% of what number is 35?

Example 11) What is $24\frac{1}{2}\%$ of 120?

Example 12) What percent of \$50 is \$17.50?

5. Ratios and proportions (p. 119-121)

Example 13) If 28 kg of seed cost \$33, how much would 35 kg cost at the same rate?

Example 14) A bag was filled with white marbles and pink marbles in the ratio of 3 to 7. If there were 250 marbles in the bag, how many were white?

6. Solve word problems with fractions, decimals, ratios and percents

Example 15) An item was on sale for 20% off the regular price. If the sale price was \$48, what was the regular price?

Example 16) The regular price was \$24, but the item was on sale for 40% off. What was the sale price?

Example 17) During the off-season, the room rates at the resort were reduced 45%. If the usual rate was \$120 per day, what was the off-season rate?

7. Solve simple equations (p. 113-119)

Example 18) Solve for x: $\frac{5.6}{x} = \frac{20}{25}$

8. Solve problems involving units of measure

Example 19) Convert 4 square yards to square feet.

Example 20) 1.2 kg – 360 g = _____g

Answers: 1) $10\frac{5}{12}$ 2) $\frac{7}{5}$ 3) $2\frac{11}{15}$ 4) 397.5 5) 0.09 6) 0.3, 0.375 7) $\frac{1}{50}$, $\frac{17}{20}$ 8) 18 9) 40%
10) 50 11) 29.4 12) 35% 13) \$41.25 14) 75 15) \$60 16) \$14.40 17) \$66 18) 7
19) 36 sq ft 20) 840 g

Insider's Tip: There are a lot of percent questions on the exam and students often get these wrong. Study percents!

Insider's Tip: Study without a calculator. You can't use a calculator on the exam.

Insider's Tip: Spend more time on objectives that you are struggling with. Spend less time on objectives that you have already mastered.

Insider's Tip: This is a multiple-choice test. Sometimes, you can estimate to find the only answer that makes common sense.

Test Objectives: **Algebra Test**

1. Evaluate algebraic expressions (p. 110-112)

Example 1) Evaluate: $ab - c$ if $a = 3$, $b = -2$ and $c = -6$

Example 2) Evaluate: $x^2 - x + 7$ if $x = -3$

2. Solve linear equations (p. 113-119)

Example 3) Solve for x: $4(x - 5) - 2(x+3) = -15$

Example 4) Solve for x: $4 - \frac{1}{2x} = 12$

Example 5) Solve for x: $3\frac{1}{4}x - 14 = 77$

3. Add, subtract, multiply and divide polynomials (p.127-139)

Example 6) Multiply: $(2x - 3y)^2$

Example 7) Subtract $(2x^3 - 7x^2 - 3x + 1) - (-3x^3 + 2x - 5x + 6)$

4. Factor polynomials (p. 140-145)

Example 8) Factor: $x^2 - 2x + 1$

Example 9) Factor: $2x^2 + 5x - 12$

5. Simplify algebraic expressions with fractions (p. 151-159)

Example 10) $\frac{4}{3y} - \frac{5}{2y}$

Example 11) $\frac{2x - 4}{4}$

Example 12) $\frac{x^2 - y^2}{x + y}$

6. Graph points and lines (p. 163-170)

Example 13) Graph: $y = -x + 3$

Example 14) Graph: $x + 2y = 4$

7. Simplify Roots and Radicals (p. 170-176)

Example 15) Simplify: $\sqrt{36a^4b^5}$

Example 16) Simplify: $(2y\sqrt{x})^2$

8. Word problems (p. 260-263, 270-284)

Example 17) If Jenn can type 600 pages in twenty-one days, how many days will it take her to type 230 pages if she works at the same rate?

Answers: 1) 0 2) 19 3) $11\frac{1}{2}$ 4) $^{-1}/_{16}$ 5) 28 6) $4x^2 - 12xy + 9y^2$ 7) $5x^3 - 7x^2 - 5$ 8) $(x - 1)^2$ 9) $(2x - 3)(x + 4)$ 10) $^{-7}/_{6y}$ 11) $x^{-2}/_2$ 12) $x - y$ 15) $6a^2b^2\sqrt{b}$ 16) $4y^2x$ 17) about 8 days

Insider's Tip: You don't have to take the arithmetic and algebra portions of the test at the same time. You may want to take the arithmetic portion, and then come back another day to take the algebra test.

Insider's Tip: Don't rush. Be sure that you have enough time to take the test. It's not a timed test!

Insider's Tip: Before solving a word problem, read it several times. Be sure you understand the question.

March 17, 2002

revised

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