PRACTICE FOR PLACEMENT EXAM – PART A

For students trying to place into:
MAT 0995, Intermediate Algebra
MAT 1000, Mathematics in Today’s World
MAT 1050, Algebra with Trigonometry

Problems 1-25 are based on Arithmetic and Beginning Algebra. Those wishing to place into MAT 0995, 1000 or 1050 should have this material mastered. To study, take the Practice Exam Part A. It contains 50 questions which cover the same topics as the 25 questions on the Placement Exam in Part A. The questions on the actual Placement Exam are multiple choice.

For help with specific questions, go to the Mathematics Resource Center in room 1198 FAB. The lab is free of charge and an appointment is not necessary.

For a general review, consult any beginning algebra textbook. You may borrow one from the Mathematics Resource Center.

For a general review on line, search by Googling “beginning algebra tutorials” or “learn algebra” or a specific topic, such as “fractions.”
1) Place each of the following numbers in the appropriate place on the number line.
   a) \(\frac{18}{37}\)  
   b) \(-\frac{2}{5}\)  
   c) \(1\frac{3}{7}\)  
   d) \(-2.7\)  
   e) \(\frac{13}{24}\)  
   f) \(\frac{7}{3}\)

2) Arrange the following numbers in order from smallest on the left to largest on the right: \(\frac{4}{7}, \frac{29}{31}, \frac{6}{11}, \frac{2}{19}\)

3) Arrange the following numbers in order from smallest on the left to largest on the right: \(\frac{3}{8}, 0.37, 0.375\)

4) Each video game costs $18.99. John has $239.50 to spend. Estimate how many video games he can buy?

5) Simplify completely: \(\left(\frac{5}{6} \div \frac{5}{3}\right) + \frac{3}{7}\)

6) Estimate the following: \(99.8 \times 2,495.783\)
7) To obtain a certain shade of pink, a painter must mix 7 parts red paint with 3 parts white paint. If the painter uses 28 gallons of red paint, how many gallons of white paint are needed?

8) Carlos made $162 this week for 12 hours of work. How much did Carlos make per hour?

9) A thunderstorm dropped $\frac{1}{2}$ inches of rain between 7:00 AM and 9:00 AM and another $\frac{3}{10}$ inches between 9:00 AM and 11:00 AM. How many total inches of rain fell between 7:00 AM and 11:00 AM?

10) A piece of elastic is 28.5 inches long. It is stretched until it is 39 inches long. How many inches did the elastic stretch?

11) Shantell is on a strict diet. She has to drink $\frac{1}{3}$ quarts of water every day for 8 days. How many total quarts of water will she have to drink?
12) Marcy wants to buy a car for $3600. A down payment of 35% is required. How much is the down payment?

13) Evaluate \( \frac{2y^2x}{y-x^2} \) when \( x = -2 \) and \( y = 2 \).

14) Simplify completely: \( \frac{1}{3}x + xy - 3x^2 + 3xy + x^2 + \frac{2}{3}x \)

15) Simplify completely: \( -2[x + 2 - 3(x + 2)] - x \)
16) Multiply and simplify: \((x - y)(2x^2 y + x - y)\)

17) Solve: \(3(2 - y) - 4 = 4 - 5(y + 1)\)

18) Solve: \(\frac{3A}{4} + 1 = \frac{2A - 1}{3}\)

19) Solve for \(T\): \(V = \frac{2P + T}{T}\)

20) 28 is what percent of 70?
21) Solve: \(3 > \frac{4 + u}{-5}\)

22) Solve and graph the solution set: \(-2 + 3(x - 3) \geq 2 - (4 + x)\)

23) Graph: \(3y - x = 6\). Label two points.

24) Given the line \(3x - y = -4\)
   a) Find the \(y\) intercept.
   b) Find the \(x\) intercept.

25) Graph: \(x = -\frac{7}{2}\)
26) Find the slope (if it exists) of the line through the given points:
   a) \((3, -3)\) and \((-5, 1)\)   
   b) \((-1, \frac{2}{3})\) and \((3, \frac{2}{3})\)

27) Graph the line that has a y intercept \((0, -1)\) and a slope of \(-\frac{1}{3}\).
   Label two points.

28) Find the slope (if it exists) of each of the following lines:
   a) \(x = -9\)   
   b) \(y = 4\)   
   c) \(4x - 2y = 12\)

29) The graph shows the number of hot dogs sold each month of the year.
   a) If the goal was to sell at least 400 hot dogs each month, during which month(s) was the goal achieved?
   b) About how many hot dogs were sold in February?

30) In a triangle, the second angle is twice the first angle and the third angle is \(20^\circ\) less than the first angle. Find the measure of all three angles.
31) The area of a certain shape is given by the formula $A = 4lw + w^2$. Find the area when $l = 3$ and $w = 2$.

32) Simplify completely: $\left(-2x^2y\right)^2 \left(4x^4y^3\right)$

33) Simplify completely: $-2x(3x - 5) - 4(x^2 - 2x + 1)$

34) Perform the indicated operation and simplify completely: $(y - 2x)^2$

35) Simplify completely: $\left(1 - 3^{-1}\right) \left(-3^{-1}\right)$
36) Simplify completely: \( \frac{a b^{-2} c^{-3}}{a^{-2} b^{-3} c^2} \)

37) Simplify completely: \( \frac{x^2 + 5x + 4}{x + 1} \)

38) The ratio of men to women in a large psychology class is 4 to 5. If there are 120 men, how many women are in the class?

39) Find the value of \( 2^{-3} - 2^0 \).

40) \( \left( \frac{2}{5} - \frac{1}{4} \right) \left( -\frac{1}{9} \right) \) equals
41) Solve: $9x^2 = 4$

42) Solve: $x(x + 1) = 12$

43) Mike bought a shirt and a package of socks. The shirt cost $17.50 more than the socks. Mike paid $30 total. How much did each cost?

44) Place each of the following numbers in the appropriate place on the number line.

a) $\sqrt{10}$  
b) $\sqrt{15}$  
c) $\sqrt[3]{\frac{36}{49}}$  
d) $\sqrt{28}$

45) The triangle shown is a right triangle. Find $x$. 

![](image)
46) Simplify completely: \[ \frac{3x - 9x^2}{9x^2} \]

47) By estimating, determine which of the following is the largest:

a) \( \frac{2}{3} \) of 612  
   b) 51.2 % of 858  
   c) 99% of 398  
   d) \( \frac{1}{4} \) of 1579

48) A garden has a perimeter of 88 feet. The length is 2 feet more than the width. Find the length and the width of the garden.

49) The graph shows the number of births per 1000 population for the years 1940 through 1996. Approximately how many years did it take for the number of births to drop from 75 per 1000 births to 65 per 1000 births?

50) The formula to convert Celsius temperature to Fahrenheit is given by \( F = \frac{9}{5}C + 32 \). Solve for \( C \).