AUGSBURG UNIVERSITY

Math Placement Exam
Information & Practice Questions

The Math Placement Exam consists of thirty multiple choice questions. Even though the questions are multiple choice, you should work through each problem as you would on any math test. There is no time limit on the test so work slowly and carefully. Please bring a pencil and your calculator to the exam.

To place in (at least) Math Placement Group 2, you will need to correctly answer at least 8 out of the first 10 questions on the Math Placement Exam. You should work on practice questions 1–20 (Basic Math). You would need to answer at least 16 of those 20 questions correctly.

To place in (at least) Math Placement Group 3, you will need to correctly answer at least 6 out of the second 10 questions on the Math Placement Exam. You should work on practice questions 21–40 (Algebra). You would need to answer at least 12 of those 20 questions correctly.

To place in Math Placement Group 4, you will need to have taken a Precalculus course (or an equivalent fourth year High School math course), have completed 4 years of High School math, and correctly answer at least 7 out of the second 10 questions and at least 6 out of the last 10 questions on the Math Placement Exam. You should work on practice questions 21–40 (Algebra). You would need to answer at least 14 of those 20 questions correctly. You should also work on practice questions 41–50 (Precalculus). You would need to answer at least 6 of those 10 questions correctly.

If you have questions about the Math Placement Exam, such as when it is offered next, or if you want advice on how to advance your Math Placement Group, please contact the Academic Advising Center at Sverdrup Hall (612-330-1025).

Students may only re-take the Math Placement Exam during their first term (semester or trimester) at Augsburg. A student may re-take the Math Placement Exam only at times scheduled by The Academic Advising Center and no sooner that 30 days since the last time that student took the exam.

The answers to all of the practice questions are at the end.

Basic Math
(needed to advance from MPG 1 to MPG 2)

(1) $11.9 - 3.2 + 1.7 =$
(a) 7.0 (b) 16.8 (c) 10.4 (d) - 7.0

(2) At the deli, turkey costs $ 4.29 per pound and ham costs $ 2.99 per pound. How much does it costs to buy 2 pounds of turkey and 3 pounds of ham?
(a) $ 17.55 (b) $ 18.85 (c) $ 36.40 (d) $ 34.62

(3) A student's grades her first semester of college were one 3.5, two 3.0's, and one 2.0. What is her GPA (average grade)?
(a) 2.933 (b) 2.750 (c) 3.833 (d) 2.875

(4) If it takes a secretary 20 minutes to type 4 pages, how many pages can he type in 50 minutes?
(a) 10 (b) 11 (c) 9 (d) 12

(5) A 5-pound sack of flour sells for $ 1.29 while a 10-pound sack of flour sells for $ 2.18. To the nearest cent, how much more per pound is the 5-pound bag?
(a) 89¢ (b) 40¢ (c) 4¢ (d) 18¢

(6) The scale on the map says " $\frac{1}{2}$ inch represents 20 miles". How many miles am I from Augsburg if I'm 3 inches away on the map?
(a) 60 (b) 120 (c) 30 (d) 150

(7) Out of 15 students surveyed, only one reported liking opera. Approximately what percentage of students surveyed like opera?
(a) 15 % (b) 6.67 % (c) .067 % (d) .15 %

(8) Bus fares recently increased from 85¢ to $ 1.00. What was the approximate percentage increase?
(a) 18 % (b) 15 % (c) .15 % (d) .18 %

(9) A shirt originally sold for $ 35. Now it's on sale for "20 % off". If the sales tax is $6\frac{1}{2}$ %, what is the final price of the shirt?
(a) $ 21.50 (b) $ 29.82 (c) $ 28.00 (d) $ 29.74

(10) The number 9 is 6 % of what number?
(a) 54 (b) 15 (c) 150 (d) .54

(11) Which of the following numbers is least?
(a) - 2.5 (b) - 2.31 (c) - 3.14 (d) -3.2

(12) $4 - (5 - 7)^2 =$
(a) 64 (b) 8 (c) 36 (d) 0

(13) $\sqrt[3]{3600}$ is
(a) 180 (b) 1200 (c) 60 (d) less than 20

(14) When the fraction $\frac{125}{100}$ is reduced to its simplest form, its denominator (bottom) is
(a) 5 (b) 20 (c) 100 (d) 4

(15) Which fraction is largest?
(a) $\frac{36}{100}$ (b) $\frac{37}{99}$ (c) $\frac{37}{100}$ (d) $\frac{36}{99}$

(16) It takes $1\frac{1}{2}$ cups of sugar to make one batch of my favorite cookies. How many cups of sugar would it take to make $\frac{1}{2}$ batch?
(a) 3 (b) $1\frac{1}{4}$ (c) $\frac{3}{4}$ (d) 1

(17) $\frac{1}{2} + \frac{1}{3} + \frac{5}{6} =$
(a) $\frac{5}{3}$ (b) $\frac{7}{11}$ (c) $\frac{7}{36}$ (d) $\frac{7}{6}$

(18) In simplest form $\dfrac{3}{\frac{2}{5} - \frac{1}{10}}$
(a) 10 (b) $-\frac{45}{2}$ (c) $\frac{3}{10}$ (d) $\frac{1}{10}$

(19) When x = 2 and y = -3, $5x - 2y$
(a) 9 (b) 5 (c) 16 (d) 4

(20) If $s = \frac{t - 1}{t + 2}$ and t = 3, then s =
(a) $\frac{1}{2}$ (b) $\frac{2}{5}$ (c) $-\frac{1}{2}$ (d) $\frac{1}{3}$

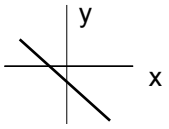
Algebra
(needed to advance from MPG 2 to MPG 3)

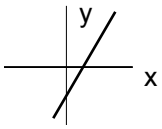
(21) In simplest form, $7x - 5(2x - 4) =$
(a) $- 3x + 20$ (b) $- 3x + 4$ (c) $- 3x - 20$ (d) $- 3x + 4$

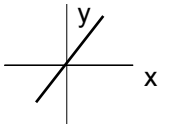
(22) Solve for x: $5(2x + 3) = 4(x + 1)$
(a) $x = - 3$ (b) $x = -\frac{11}{6}$ (c) $x = -\frac{1}{3}$ (d) $x = -\frac{6}{11}$

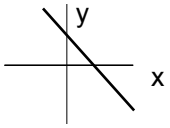
(23) Solve for t: $s = d + vt$
(a) $t = \frac{s}{dv}$ (b) $t = \frac{s-d}{v}$ (c) $t = \frac{s}{v} - d$ (d) $t = \frac{s}{d} - v$

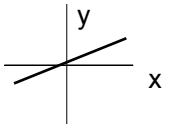
(24) Last year, the IRS audited 10,000 tax returns of which 500 were incorrect. Based on this information, how many of the 250,000,000 tax returns filed each year are probably incorrect?
(a) 500 (b) 12,500,000 (c) 12,500 (d) 125,000,000

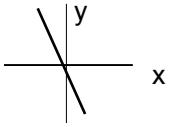
(25) The graph of $y = 3x - 2$ looks most like
(a) 

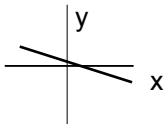
(b) 

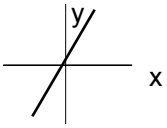
(c) 

(d) 

(26) Which of the following lines has the greatest slope?
(a) 

(b) 

(c) 

(d) 

(27) If $1 - 2x \le 3$, then
(a) $x \le - 2$ (b) $x \ge - 2$ (c) $x \le - 1$ (d) $x \ge - 1$

(28) Yesterday, I bought two cups of espresso and one biscotti for $ 4.40. This morning, I bought one cup of espresso and two biscotti for $ 3.55. What does an espresso cost?
(a) between $ 1.50 and $ 2.00 (b) under $ 1.00
(c) between $ 1.00 and $ 1.50 (d) over $ 2.00

(29) In simplest form, $\frac{-2x^2y^3}{6(xy^2)^3} =$
(a) $\frac{-x}{3y^3}$ (b) $\frac{-x}{3y^2}$ (c) $\frac{-1}{3x^2y^2}$ (d) $\frac{-1}{3xy^3}$

(30) Evaluate 9^{-2}
(a) $\frac{1}{3}$ (b) $- 18$ (c) 3 (d) $\frac{1}{81}$

(31) Evaluate $(16)^{\frac{3}{2}}$
(a) 24 (b) 2048 (c) 64 (d) 12

(32) $\frac{2.30 \times 10^5}{1.15 \times 10^{10}} =$
(a) 2.00×10^{-5} (b) 2.00 (c) $2.00 \times 10^{\frac{1}{2}}$ (d) 1.00

(33) When $x = 2$, $\frac{1 - x^4}{1 - x} =$
(a) 15 (b) 8 (c) - 16 (d) 16

(34) $(y - 8)^2 =$
(a) $y^2 - 16y - 64$ (b) $y^2 - 16y + 64$
(c) $y^2 + 64$ (d) $y^2 - 64$

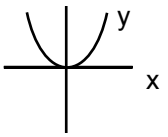
(35) Solve $2x^2 + 3x - 2 = 0$
(a) $x = -\frac{1}{2}$ and $x = 2$ (b) $x = \frac{1}{2}$ and $x = - 2$
(c) $x = - 1$ and $x = 2$ (d) $x = 1$ and $x = - 2$

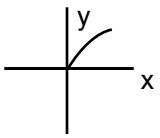
(36) In simplest form $\frac{x^2 - 2x}{x^2 - x - 2} =$
(a) - 1 (b) 1 (c) $\frac{x}{x+1}$ (d) $\frac{2x}{x+2}$

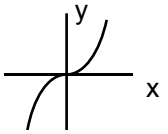
(37) $\frac{2}{x+1} - \frac{1}{x-1} =$
(a) $\frac{1}{x^2+1}$ (b) $\frac{x-2}{x^2-1}$ (c) $\frac{x-3}{x^2-1}$ (d) $\frac{x-1}{x^2-1}$

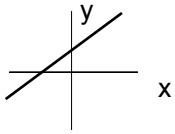
(38) In simplest form $\frac{\frac{1}{y} - \frac{1}{x}}{x - y} =$
(a) - 1 (b) $\frac{(x - y)^2}{xy}$ (c) $\frac{1}{xy}$ (d) $\frac{(x + y)^2}{xy}$

(39) In simplest form $\sqrt[3]{81x^3y^2} =$
(a) $9xy\sqrt{x}$ (b) $27xy\sqrt{x}$ (c) $27x\sqrt[3]{y^2}$ (d) $3x\sqrt[3]{3y^2}$

(40) The graph of $y = x^2$ looks most like
(a) 

(b) 

(c) 

(d) 

Precalculus
(needed to advance from MPG 3 to MPG 4)

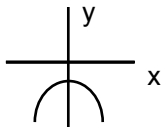
(41) If $f(x) = 4x^2$, then $f(-3) =$
(a) 144 (b) - 144 (c) - 36 (d) 36

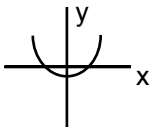
(42) If $|x + 2| < 4$, then
(a) $-6 < x < 2$ (b) $x < -2$ or $x > 2$
(c) $-2 < x < 2$ (d) $x < -6$ or $x > 2$

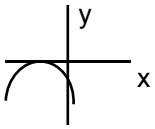
(43) Simplify $(81)^{\frac{1}{4}}(8)^{\frac{2}{3}}$
(a) - 108 (b) $-48\sqrt{2}$ (c) $\frac{4}{3}$ (d) - 12

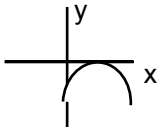
(44) Solve for x: $3x^2 - 4x - 1 = 0$
(a) $x = -13$ and $x = 1$ (b) $x = 2 \pm \sqrt{7}$
(c) $x = 13$ and $x = -1$ (d) $x = \frac{2 \pm \sqrt{7}}{3}$

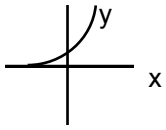
(45) Solve for t: $\sqrt{t + 5} = t - 1$
(a) $t = 3$ only (b) $t = 4$ only
(c) $t = 4$ and $t = -1$ (d) $t = 3$ and $t = -2$

(46) The graph of $y = -(x - 3)^2$ looks most like
(a) 

(b) 

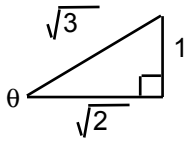
(c) 

(d) 

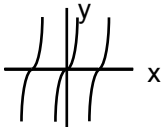
(47) Which of the following is most likely the equation of the graph drawn at the right?


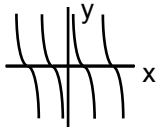
(a) $y = \log_2 x$ (b) $y = 2x$ (c) $y = 2^x$ (d) $y = x^2$

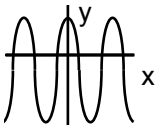
(48) $\log_2 32 =$
(a) approximately 1.204 (b) 16
(c) approximately 1.505 (d) 5

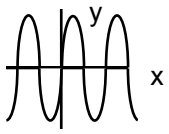
(49) If θ is the angle in the triangle drawn at the right, then $\cos \theta =$


(a) $\sqrt{\frac{2}{3}}$ (b) $\sqrt{\frac{1}{3}}$ (c) $\sqrt{\frac{1}{2}}$ (d) $\sqrt{\frac{3}{2}}$

(50) The graph of $y = \sin x$ looks most like
(a) 

(b) 

(c) 

(d) 

Answers

1 c	11 d	21 a	31 c	41 d
2 a	12 d	22 b	32 a	42 a
3 d	13 d	23 b	33 a	43 c
4 a	14 d	24 b	34 b	44 d
5 c	15 b	25 b	35 b	45 b
6 b	16 c	26 d	36 c	46 d
7 b	17 a	27 d	37 c	47 c
8 a	18 a	28 a	38 c	48 d
9 b	19 c	29 d	39 d	49 a
10 c	20 b	30 d	40 a	50 d