Algebra 2 Readiness Assessment

REVIEW PACKET

It is highly recommended that all students study the Algebra 2 Readiness Review Packet before taking the Algebra 2 Readiness Assessment for the first time.

Math Success is the Goal!
It is crucial that students develop a strong sequential understanding of math content and math concepts as they move from grade to grade. In the event that students miss or do not have a firm grasp of the content or concepts at one math level, they are likely to struggle as they progress to the next grade and math level. Our goal is that students thrive and succeed in each of their math classes!

Math Readiness Assessments
Each Spring, The Classical Academies will administer math readiness assessments for those students who wish to take Algebra 2 during the following academic year.

Two Attempts
Each student may take the Algebra 2 Readiness Assessment two times. If a student does not pass the Algebra 2 Readiness Assessment after two attempts, the student will be enrolled in another math course for the following academic year. It is highly recommended that all students study the Algebra 2 Readiness Review Packet before taking the Algebra 2 Readiness Assessment for the first time.

About this Review Packet
This review packet has 58 math questions just like the 58 math questions that are on the Algebra 2 Readiness Assessment. For each of the 58 questions on the Algebra 2 Readiness Assessment, there is a single practice question of a similar type in this Review Packet. Answers to all review packet questions are on the last pages of this review packet.

No Calculator
This review packet is to be completed without the use of a calculator and all of our Algebra 2 Readiness Assessments are to be completed without the use of a calculator.

We want all students to be successful and confident in math!
NO CALCULATOR.
This readiness assessment REVIEW PACKET is to be completed without the use of a calculator.

Section A.  Geometry Skills

1. Answers may be left in simplified radical form or rounded to the tenths place if necessary.
   
a. What is the sum (in degrees) of all of the interior angles of a regular heptagon?
   *(Include the correct units with your answer.)* __________________

   b. What is the measure (in degrees) of one of the exterior angles of a regular hexagon?
   *(Include the correct units with your answer.)* __________________

   c. What is the distance between the points (7, 3) and (-5, 6)?
   *(Your answer to this question does NOT require any units.)* __________________

   d. If one leg of a right triangle has a length of 3 cm, and the other leg has a length of 4 cm, what is the length of the hypotenuse?
   *(Include the correct units with your answer.)* __________________

   e. If the base of a triangle has a length of 10 inches and the height of the triangle is 7 inches, what is the area of the triangle?
   *(Include the correct units with your answer.)* __________________

   f. What is the circumference of a circle whose radius has a length of 5 feet?
   *(Include the correct units with your answer.)* __________________

   g. What is the area of a circle whose diameter is 14 yards?
   *(Include the correct units with your answer.)* __________________

   h. What is the volume of a right rectangular prism whose length is 8 cm, depth is 5 cm, and height is 2 cm?
   *(Include the correct units with your answer.)* __________________
Section B. Operations with Fractions

2. Simplify completely.

a. \( \frac{4}{9} + \frac{1}{9} \)

b. \( \frac{1}{2} + \frac{3}{7} \)

c. \( \left( \frac{2}{5} \right) \left( \frac{4}{7} \right) \)

d. \( 5 \left( \frac{2}{7} \right) \)

e. \( \left( -\frac{2}{3} \right) \left( -\frac{1}{9} \right) \left( -\frac{5}{1} \right) \)

f. \( \frac{7}{15} + \frac{4}{15} + \frac{2}{15} \)

g. \( \frac{9}{13} - \frac{5}{13} \)

h. \( \frac{2}{7} - \frac{6}{7} \)

i. \( \frac{7}{5} + \left( -\frac{3}{5} \right) \)

j. \( \frac{3}{8} + \frac{13}{8} \)
Section C. Operations with Variables

3. Simplify completely.

   a. \[ x^3 x^4 \]

   b. \[ 3x + 5x \]

   c. \[ (7x)(9x) \]

   d. \[ x + 5x + 3x \]

   e. \[ (-x)(-7x)(-2x) \]

   f. \[ 4x^2(7x^5) \]

   g. \[ 3x^2 + 2x^2 \]

   h. \[ (x^5)^3 \]

   i. \[ (2x^4)^3 \]

   j. \[ (x)(x)(x)(x)(x) \]

   k. \[ \frac{10x^7}{2x^4} \]

   l. \[ \frac{-2x^3}{8x^6} \]

   m. \[ 5(x - 7) \]

   n. \[ -3(x - 8) \]

   o. \[ (x + 3)(x + 5) \]

   p. \[ (x + 5)^2 \]

   q. \[ (x - 4)(x + 9) \]

   r. \[ 2x(4x + 7) \]

   s. \[ x + x + x + x \]

   t. \[ 9x - x \]
Section D. Solving Equations

4. Solve for x.

   a. $6x = 54$

   b. $2x + 3x = 35$

   c. $7x = 42 + x$

   d. $2x + 3 = 6x - 9$

   e. $\frac{1}{3}x = 12$

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

   g. $4 + \frac{1}{2}x = 13$

   h. $2x = 28 - 5x$

   i. $9x + 8 = 5x$

   j. $x + 2x = 48 - 5x$
Section E.  Linear Equations

5. Each answer in this section should be a linear equation.

a. Write the equation for the line that has a slope of 3 and which passes through the point (-7, 5).

(The answer may be in point-slope form, slope-intercept form, or standard form.)

b. Write the equation for the line that has a slope of 2/5 and which has a y-intercept of 9.

(The answer may be in point-slope form, slope-intercept form, or standard form.)

c. Write the equation for the line that passes through the point (2, 3) and the point (7, 13).

(The answer may be in point-slope form, slope-intercept form, or standard form.)

d. Rewrite this linear equation in slope-intercept form, which is the form \( y = mx + b \).

\[ 12x - 4y = 16 \]
Section F. Graphing Lines

6. Graph each line carefully.
   Make your lines long and be sure to indicate at least 3 precision points on each line.

   a. \( y = \frac{2}{3}x - 3 \) 
   
   d. \( y = -2x + 4 \) 

   b. \( y = -\frac{1}{3}x + 5 \) 
   
   e. \( 3x + 2y = 18 \) 

   c. \( y = x \) 
   
   f. \( y = -3x \) 

The End.
All answers on the next two pages.
The Classical Academies  
Algebra 2 Readiness Assessment  
REVIEW PACKET  
(revised in 2013)

# The Answers!

<table>
<thead>
<tr>
<th>1. a. 900°</th>
<th>3. a. ( x^7 )</th>
<th>5. Linear Equations</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. 60°</td>
<td>b. 8x</td>
<td>a. Any one of these three answers is a correct answer.</td>
</tr>
<tr>
<td>c. ( \sqrt{153} )</td>
<td>c. 63x²</td>
<td>((y - 5) = 3(x + 7))</td>
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<tr>
<td>d. 5 cm</td>
<td>d. 9x</td>
<td>(y = 3x + 26)</td>
</tr>
<tr>
<td>e. 35 in²</td>
<td>e. (-14x^3)</td>
<td>(3x - y = -26)</td>
</tr>
<tr>
<td>f. 10(\pi) feet</td>
<td>f. 28x²</td>
<td></td>
</tr>
<tr>
<td>g. 49(\pi) yards²</td>
<td>g. 5x²</td>
<td>b. Any one of these two answers is a correct answer.</td>
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<tr>
<td>h. 80 cm³</td>
<td>h. (x^{15})</td>
<td>(y = \frac{2}{5}x + 9)</td>
</tr>
<tr>
<td></td>
<td>i. 8x²</td>
<td>(2x - 5y = -45)</td>
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<td></td>
<td>j. (x^5)</td>
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<td></td>
<td>k. 5x³</td>
<td>c. Any one of these four answers is a correct answer.</td>
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<tr>
<td></td>
<td>l. (-\frac{1}{4x^3})</td>
<td>((y - 3) = 2(x - 2))</td>
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<tr>
<td></td>
<td>m. 5x - 35</td>
<td>((y - 13) = 2(x - 7))</td>
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<td></td>
<td>n. (-3x + 24)</td>
<td>(y = 2x - 1)</td>
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<tr>
<td></td>
<td>o. (x^2 + 8x + 15)</td>
<td>(2x - y = 1)</td>
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<td></td>
<td>p. (x^2 + 10x + 25)</td>
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<td></td>
<td>q. (x^2 + 5x - 36)</td>
<td>d. This is the only correct answer for this question.</td>
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<td></td>
<td>r. (8x^2 + 14x)</td>
<td>(y = 3x - 4)</td>
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<tr>
<td></td>
<td>s. 4x</td>
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</tr>
<tr>
<td></td>
<td>t. 8x</td>
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<tr>
<td>2. a. (\frac{5}{9})</td>
<td>4. a. 9</td>
<td></td>
</tr>
<tr>
<td>b. (\frac{13}{14})</td>
<td>b. 7</td>
<td></td>
</tr>
<tr>
<td>c. (\frac{8}{35})</td>
<td>c. 7</td>
<td></td>
</tr>
<tr>
<td>d. (\frac{10}{7})</td>
<td>d. 3</td>
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<tr>
<td>e. (-\frac{10}{27})</td>
<td>e. 36</td>
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</tr>
<tr>
<td>f. (\frac{13}{15})</td>
<td>f. (-\frac{35}{3})</td>
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<tr>
<td>g. (\frac{4}{13})</td>
<td>g. 18</td>
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<tr>
<td>h. (-\frac{4}{7})</td>
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<tr>
<td>i. (\frac{4}{5})</td>
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<td></td>
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<tr>
<td>j. 2</td>
<td>i. (-2)</td>
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<td></td>
<td>j. 6</td>
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</tbody>
</table>

(continued on the other side)
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   b. \( y = -\frac{1}{3}x + 5 \)

   c. \( y = x \)

   d. \( y = -2x + 4 \)

   e. \( 3x + 2y = 18 \)

   f. \( y = -3x \)

The End.