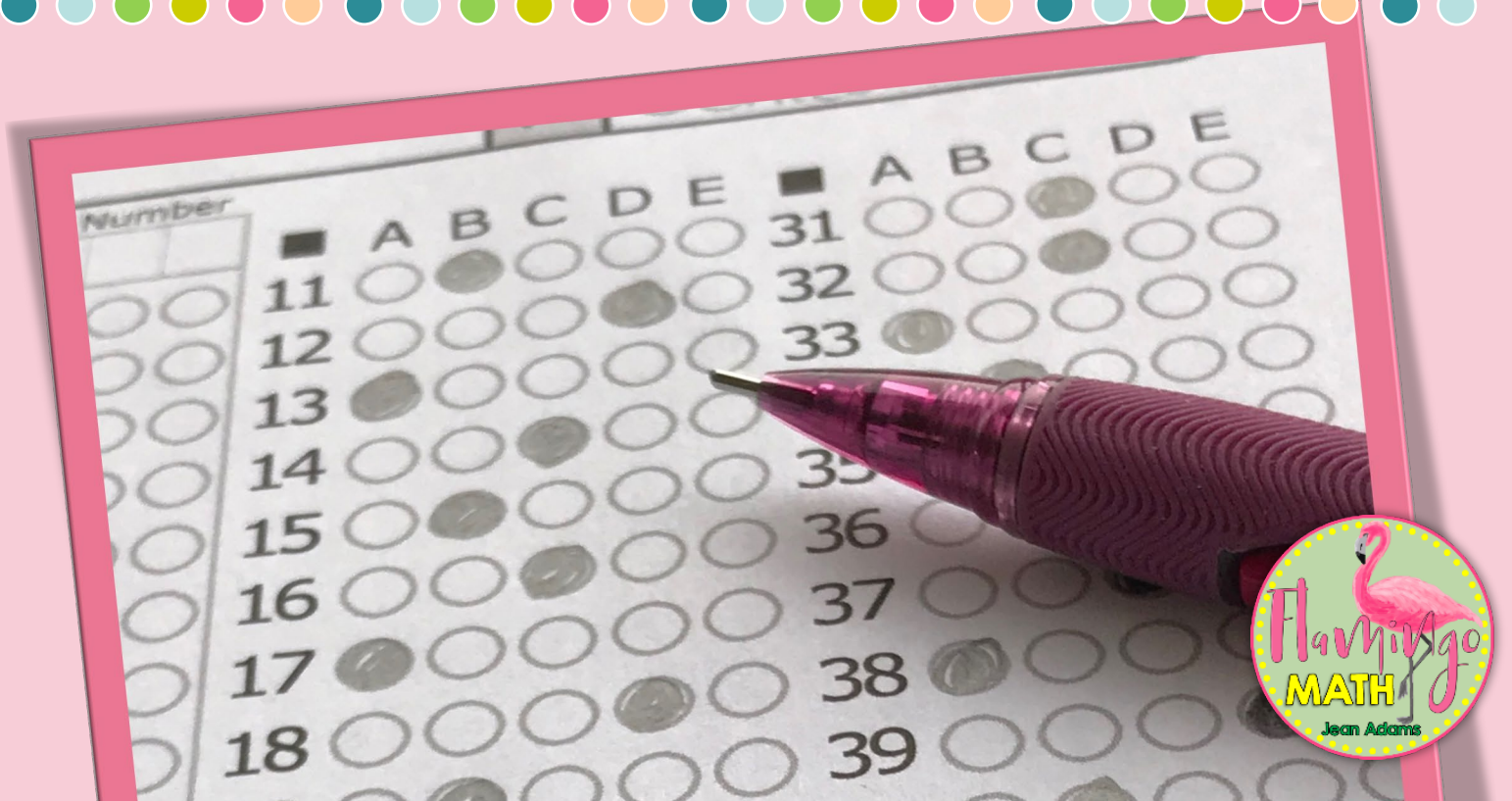


Algebra 2 Honors

Second Semester Exam



Editable Assessments

Algebra 2 Honors Semester Two Exam



This resource is designed for an Algebra 2 Honors course.

Product Overview

SEMESTER TWO EXAM

Here is a comprehensive review packet of 55 questions for your Algebra 2 Honors students to prepare for their Mid-Term Exam. The answers are included at the end of the packet so students will know they are on the right path.

There is a 50-question multiple-choice exam with answer key included. The content covers units 1-8 in my full year curriculum.

There is also a MICROSOFT WORD® version of the form that is fully editable if you need to adjust the questions to meet your district and personal needs.

You will also find a 50-question ZIP GRADE PDF document if you need one.

There are 22 pages of rigorous material to prepare your students and test them at a level that lets you know their true abilities for the entire course.

Teacher Notes – Using the Resource

All review assignments, quiz, and test items are both in PDF format and Microsoft Word for creating and altering items to meet your teaching needs, *minimize your prep time, and offer a variety of assessment instruments..*

Algebra 2 Honors

Semester 2 Reference Sheet

Area of a Triangle

$$A = \frac{1}{2} ab \sin C$$

Law of Sines

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Functions of the Sum of Two Angles

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

$$\cos(A + B) = \cos A \cos B - \sin A \sin B$$

$$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$$

Functions of the Differences of Two Angles

$$\sin(A - B) = \sin A \cos B - \cos A \sin B$$

$$\cos(A - B) = \cos A \cos B + \sin A \sin B$$

Law of Cosines

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Double Angle Identities

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

$$\cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

$$\cos 2\theta = 2 \cos^2 \theta - 1$$

Normal Curve Standard Deviation

0.1

12. Write an equation for the exponential function.

[F] $h(x) = 2^{(x-3)} + 2$

[G] $h(x) = -2^{(x+2)} + 3$

[H] $h(x) = -2^{(x-2)} + 3$

[J] $h(x) = 2^{(x-2)} + 3$

13. If $f(x) = 2x^2 + 3x^{1/2} + 3x$, what is the value of $f(27)$?

[A] $168\frac{1}{27}$

[C] $-162 + 9i$

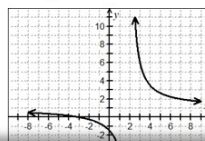
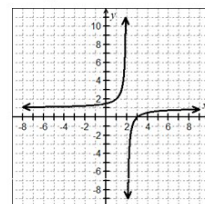
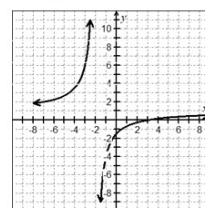
14. If $g(x) = x^2 - 5$, then $g(a - b)$ is equal to

[F] $a^2 - b^2 - 5$

[G] $a^2 - 2ab - b^2 - 5$

[H] $a^2 + b^2 - 5$

[J] $a^2 - 2ab + b^2 - 5$

1. State the domain for $f(x) = \frac{5x}{x(x^2 - 36)}$ [A] All reals, $x \neq -6, x \neq 6$ [B] All reals, $x \neq 36, x \neq 0$ [C] All reals, $x \neq 6$ [D] All reals, $x \neq -6, x \neq 6, x \neq 0$ 2. Graph $g(x) = \frac{x+3}{x-2}$. Find vertical and horizontal asymptotes.[F] $x = 2, y = 1$ [G] $x = 2, y = 1$ [J] $x = -2, y = 1$ 

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3. Divide and simplify. $\frac{2x-14}{5x-10} \div \frac{x^2-49}{x^2-4}$

[A] $\frac{2(x+7)}{5(x+2)}$

[B] $\frac{2(x+2)}{5(x+7)}$

[C] $\frac{2x+2}{5x+7}$

[D] $\frac{2(x-2)}{5(x-7)}$

4. Simplify. $\frac{\frac{1}{m} + \frac{1}{n}}{\frac{1}{m^2} - \frac{1}{n^2}}$

[F] $\frac{n-m}{mn}$

[G] $n - m$

[H] $\frac{mn}{n-m}$

5. Solve. $\frac{n+4}{7} - \frac{n-5}{6} = 4$

[A] $n = 85$

[C] $n = -109$

[D] $135 + 9i$

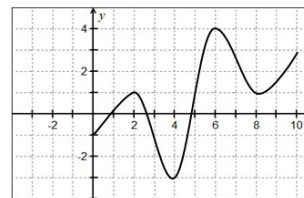
15. If $f(x) = 3x + 4$ and $g(x) = x^2 + 1$, what is the value of $g(f(x))$?

[A] $3x^2 + 7$

[B] $9x^2 + 24x + 17$

[C] $x^2 + 3x + 5$

[D] $9x^2 + 17$

16. The graph below is a sketch of the function $y = f(x)$ over the interval $0 \leq x \leq 10$. What is the value of $(f \circ f)(6)$?

[F] -3

[G] 4

[H] 16

[J] 3

17. Given $g(x) = x^3 + 4$, find $g^{-1}(x)$.

[A] $g^{-1}(x) = \sqrt[3]{x+4}$

[B] $g^{-1}(x) = \sqrt[3]{x} + 4$

[C] $g^{-1}(x) = \sqrt[3]{x-4}$

[D] $g^{-1}(x) = \sqrt[3]{x} - 4$

18. Cameron can choose either a ham or turkey sandwich, with or without cheese. She has the choice of water or apple juice with her sandwich. The total number of lunches Cameron can choose is:

[F] 2 [G] 4
[H] 6 [J] 8

19. Your Math Club has 15 students running for office. To determine how many ways these students could be elected to president, vice-president, secretary and treasurer would require the calculation of

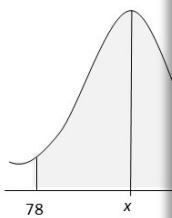
[A] a permutation
[B] a combination
[C] both a combination and permutation
[D] neither a combination and permutation

20. The chart below represents the number of breakfast drinks sold in the cafeteria before school one morning. Based on the chart, how many more orange juice or grapefruit juice were sold than apple juice?

Type of Juice	Number Sold
Apple	18
Cranberry	12
Grapefruit	10
Orange	25
Tomato	15

[F] $\frac{7}{18}$
[H] $\frac{2}{5}$

43. In the diagram below, the shaded area represents the area under a standardized test score distribution curve. If these scores were normally distributed, what would be the standard deviation?



[A] 3.5
[C] 14.0

44. A poll shows that 78% of a randomly selected population would vote for a particular candidate with a margin of error of ± 3 percentage points. Which inequality can be used to find the percentage of voters who favor this candidate?

[F] $|x - 78| \geq 3$ [G] $|x + 78| \geq 3$
[H] $|x + 3| \leq 78$ [J] $|x - 78| \leq 3$

31. B is jointly proportional to W and $(1 + Y)$. Find the constant of proportionality if $B = 180$ when $W = 300$ and $Y = 2$.

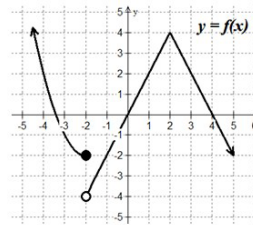
[A] 1 [B] $\frac{1}{2}$
[C] $\frac{1}{5}$ [D] 10

32. Find the number of units that produce a maximum revenue, $R = 95x - 0.1x^2$, where R is the total revenue in dollars and x is the number of units sold.

[F] 371 [G] 475
[H] 550 [J] 716

37. Write an equation for the piecewise function $y = f(x)$, shown in the graph below:

[A] $f(x) = \begin{cases} (x-2)^2 - 2, & x \leq -2 \\ 2|x-2| + 4, & x > -2 \end{cases}$
[B] $f(x) = \begin{cases} (x+2)^2 - 2, & x \leq -2 \\ -2|x-2| + 4, & x > -2 \end{cases}$
[C] $f(x) = \begin{cases} (x+2)^2 - 2, & x \geq -2 \\ -2|x-2| + 4, & x < -2 \end{cases}$
[D] $f(x) = \begin{cases} (x-2)^2 - 2, & x < -2 \\ 2|x-2| + 4, & x \geq -2 \end{cases}$



38. Solve the inequality: $x^2 - 4x + 2 < 0$. Round your result to two decimal places.

[F] (0.59, 3.41)
[H] $(-\infty, 0.59) \cup (3.41, \infty)$

39. Write the expression as the sine, cosine or tangent of a single angle.
 $\cos 114^\circ \cos 44^\circ + \sin 114^\circ \sin 44^\circ$

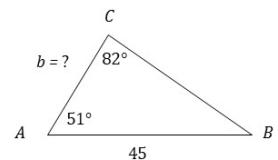
[A] $\cos 158^\circ$
[C] $\cos 70^\circ$

48. In $\triangle ABC$, $a = 8$, $b = 9$ and $m\angle C = 135^\circ$. What is the area of $\triangle ABC$?

[F] 18 [G] $18\sqrt{2}$
[H] 36 [J] $36\sqrt{2}$

49. Use the Law of Sines to find b .

[A] $b \approx 33.2$
[B] $b \approx 33.2$ or $b \approx 34.2$
[C] $b \approx 32.2$
[D] No solution exists



50. A normal distribution has a mean of 10 and a standard deviation of 1.5. In which interval does the middle 95% of the data fall?

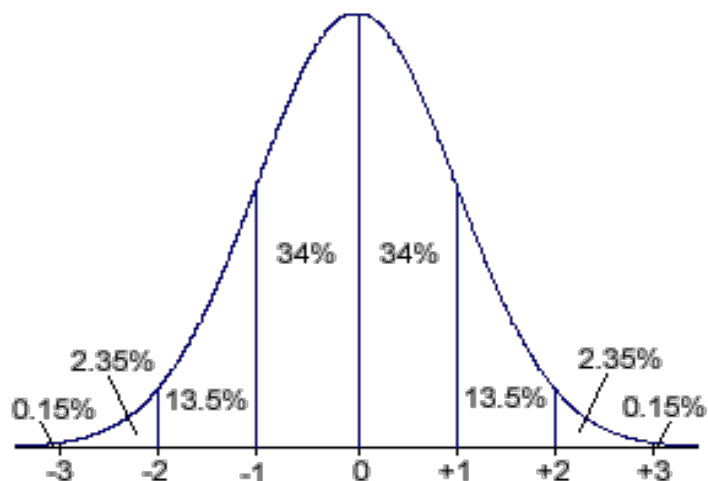
[F] $5.5 \leq x \leq 14.5$ [G] $8.5 \leq x \leq 11.5$
[H] $7 \leq x \leq 13$ [J] $-3 \leq x \leq 3$

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Semester 2 Reference Sheet

Area of a Triangle	Law of Sines
$A = \frac{1}{2} ab \sin C$	$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
Functions of the Sum of Two Angles	Functions of the Differences of Two Angles
$\sin(A + B) = \sin A \cos B + \cos A \sin B$ $\cos(A + B) = \cos A \cos B - \sin A \sin B$ $\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$	$\sin(A - B) = \sin A \cos B - \cos A \sin B$ $\cos(A - B) = \cos A \cos B + \sin A \sin B$
Law of Cosines	Double Angle Identities
$a^2 = b^2 + c^2 - 2bc \cos A$	$\sin 2\theta = 2 \sin \theta \cos \theta$ $\cos 2\theta = \cos^2 \theta - \sin^2 \theta$ $\cos 2\theta = 2 \cos^2 \theta - 1$ $\cos 2\theta = 1 - 2 \sin^2 \theta$ $\tan 2\theta = \frac{2 \tan \theta}{1 - \tan^2 \theta}$

Normal Curve Standard Deviation



Concepts on Calculator Inactive Questions:	
1.	Domain of rational function
2.	Graph rational functions and asymptotes
3.	Divide rational expressions
4.	Simplify complex fractions
5.	Solve rational equations
6.	Simplify rational exponents
7.	Solve radical equation
8.	Solve radical inequality
9.	Transformation of radical function
10.	Write equation for joint and inverse variation
11.	Model exponential function from verbal description
12.	Write equation for exponential function from graph
13.	Evaluate function containing complex numbers
14.	Use substitution for abstract variable
15.	Find composition of two functions algebraically
16.	Find composition of two functions from graph
17.	Find the inverse of a function
18.	Permutations and combinations
19.	Permutations and combinations
20.	Probability from a table
21.	Reference angle
22.	Exact value of a negative angle
23.	Range of trigonometric function
24.	Minimum value of a trigonometric function
25.	Solve for the leg of a 30-60-90 triangle
26.	Find an angle using Law of Sines
27.	Inverse trigonometric function
28.	Find quadrants where tangent is negative
29.	Factor and simplify trigonometric expression
30.	Pythagorean Identity

Concepts on Calculator Active Questions:	
31.	Find constant of proportionality for variation
32.	Find maximum revenue given a function
33.	Explain meaning of variable in context to real-world problem
34.	Write an exponential equation to model a given real-world scenario
35.	Find a maximum, limiting value, for rational function related to real-world
36.	Find inverse or a radical function with restrictions
37.	Write piecewise function, given the graph
38.	Solve quadratic inequality with decimal approximations
39.	Write cosine expressions of the sum of two angles
40.	Find sine of an angle given tangent and location quadrant
41.	Use law of cosines to find angle
42.	Permutation
43.	Find standard deviation given range of scores
44.	Write inequality for margin of error from a poll
45.	Solve trigonometric equation with radical expression
46.	Solve trigonometric equation for one revolution
47.	Solve trigonometric equation in quadrant one only, to nearest tenth.
48.	Find area of a triangle
49.	Use Law of Sines to find missing leg to nearest tenth.
50.	Find interval where 95% of data lies on normal distribution