

Algebra II Assignment Overview

April 30th

Directions	Student Checklist
Complete the activities: <ul style="list-style-type: none">• Math Algebra Review	<input type="checkbox"/> I solved all of the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 1st

Directions	Student Checklist
Complete the activities: <ul style="list-style-type: none">• Math Solving Percent• Math Solving Averages• Math Rules of Monomials	<input type="checkbox"/> I solved all of the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 4th

Directions	Student Checklist
Complete the activities: <ul style="list-style-type: none">• ACT Practice Test 3: 1 - 15	<input type="checkbox"/> I solved all of the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 5th

Directions	Student Checklist
Complete the activities: <ul style="list-style-type: none">• ACT Practice Test 3: 16 - 27	<input type="checkbox"/> I solved all of the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 6th

Directions	Student Checklist
Complete the activities: <ul style="list-style-type: none">• ACT Practice Test 3: 28- 39	<input type="checkbox"/> I solved the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 7th

Directions	Student Checklist
Complete the Activities: <ul style="list-style-type: none">• ACT Practice Test 3: 40 -53	<input type="checkbox"/> I solved the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 8th

Directions	Student Checklist
Complete the Activities: <ul style="list-style-type: none"> • ACT Practice Test 3: 54 – 60 • ACT Practice Test 6: 1-9 	<input type="checkbox"/> I solved the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 12th

Directions	Student Checklist
Complete the Activities: <ul style="list-style-type: none"> • ACT Practice Test 6: 10-23 	<input type="checkbox"/> I solved the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 13th

Directions	Student Checklist
Complete the Activities: <ul style="list-style-type: none"> • ACT Practice Test 6: 24 - 35 	<input type="checkbox"/> I solved the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 14th

Directions	Student Checklist
Complete the Activities: <ul style="list-style-type: none"> • ACT Practice Test 6: 36 - 47 	<input type="checkbox"/> I solved the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

May 15th

Directions	Student Checklist
Complete the Activities: <ul style="list-style-type: none"> • ACT Practice Test 6: 48 - 60 	<input type="checkbox"/> I solved the problems and showed my work. <input type="checkbox"/> I checked my work against the answer key and made corrections.

Support for students, parents, and guardians:

- Teachers will be available to answer questions through Zoom on the following dates. To access the support call, following the directions below
 - **May 7th, 2:00 p.m. – 2:45 p.m.**
 - Click on the link, OR <https://zoom.us/j/3791568353>
 - Open Zoom, click join, and enter Meeting ID: 379 156 8353
 - **May 14th 2:00 p.m. – 2:45 p.m.**
 - Click on the link, OR <https://zoom.us/j/3791568353>
 - Open Zoom, click join, and enter Meeting ID: 379 156 8353

MATH

Algebra Review

Simple Equations $2x + 7 = 17$ $x^2 - 5x + 6 = 0$

Difference of Squares $x^2 - 9$ $4x^2 - 16$

Quadratic Formula $3x^2 - 5x - 7 = 0$

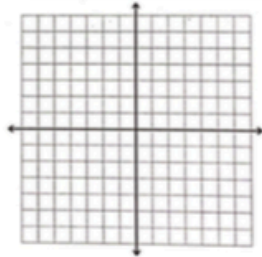
Multiplying Binomials $(2x + 3)(7x - 2)$
FOIL method

! Many students mistakenly solve $(3x + 4)^2$ as $9x^2 + 16$. Don't make this common mistake. Rewrite it as $(3x + 4)(3x + 4)$ if needed.

Graphing a Point $(-3, 6)$

Graphing a Line $y = mx + b$

$y = 2x - 3$ $4x + 3y + 5 = 0$



Slope of a Line $(4, 6)$ $(8, -2)$

Slope formula is:

Slope of Parallel & Perpendicular Lines

Distance Formula $(-3, 7)$ $(5, 1)$

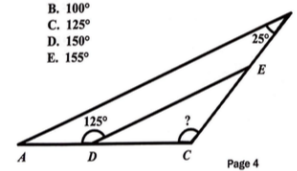
Distance formula is:

Midpoint Formula $(-3, 7)$ $(5, 1)$

Midpoint formula is:

1. For $\triangle ABC$ below, D and E are points on the sides of the triangle. If AB is parallel to DE , what is the measure of $\angle ACB$?

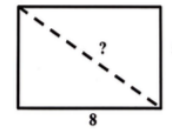
- A. 80°
B. 100°
C. 125°
D. 150°
E. 155°



Great Math Tip!
in 3 Simple Words:

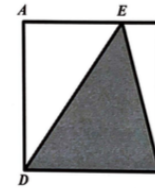
2. How many centimeters long is the diagonal of a rectangle that is 5 centimeters wide and 8 centimeters long, as shown below?

- A. 13
B. $\sqrt{13}$
C. $\sqrt{40}$
D. $\sqrt{89}$
E. $\sqrt{99}$



3. In the figure below, square $ABCD$ has sides 12 centimeters long, and E is on side AB . In square centimeters, what is the area of $\triangle DEC$?

- A. 36
B. 48
C. 72
D. 96
E. 144



? Can you explain why a student might answer 144? 48?

5. What is the length, in coordinate units, of the diameter of a circle whose endpoints have coordinate $(12, 3)$ and $(6, -5)$ in the standard (x, y) coordinate plane?

- A. $\sqrt{28}$
B. $\sqrt{80}$
C. $\sqrt{82}$
D. $\sqrt{100}$
E. $\sqrt{202}$

? Did You Know?...Asking for the length of a line segment (like the diameter) is just another way of asking for distance.

Solving Percent

MATH

1. 5 is what percent of 120?



To solve percents, you can use a proportion to compare the part to the whole:

$$\frac{\text{percent}}{100} = \frac{\text{part}}{\text{whole}}$$

2. 15% of 30 is?

Another helpful tip is to translate words to symbols. Remember, "is" means "=", "of" means multiply, and "what number" means a variable, like x .



3. 75% of what number is 24?

4. Sue bought a dress that was originally marked at \$80, she paid \$68. What was the rate of discount?

- A. 85%
- B. 60%
- C. 20%
- D. 15%
- E. 8.5%

5. A radio was marked down by 20% of the full price then later marked down by 30% of the sale price. What was the total discount rate?

- A. 25%
- B. 44%
- C. 50%
- D. 56%
- E. 60%

Many students would go for C, 50% on #5. Make up \$100 as the original price, and try this problem. The final cost would be \$56.



MATH

Solving Averages

1. Dan took two math tests. He earned a 72 on his first test and had an average of 70 for both tests. What was his score on the second test?

2. Dan had an average of 72 on his first four math tests. After taking the next test, his average dropped to 70. What was his last test grade?

3. The temperature on each of the first six days of the week were 75, 70, 82, 77, 68, and 65. If the average temperature for the week was reported as being 72, what was the temperature on the last day of the week?

4. Find the average of the first 19 positive integers.

5. Find the average of the first 20 even integers.

Rules of Monomials

MATH

When multiplying monomials,
add the exponents

$$x^2 \cdot x^3 = x^5$$

When raising a power to a power,
multiply the exponents

$$(x^2)^3 = x^6$$

When dividing monomials,
subtract the exponents

$$\frac{x^5}{x^2} = x^3$$

When an exponent is negative,
move it to the other part of the fraction

$$x^{-2} = \frac{1}{x^2} \text{ and } \frac{1}{x^{-3}} = x^3$$

1. $-(-3a^2)^2$ is equivalent to:

- A. $\frac{1}{y^{13}}$
- B. $\frac{1}{y^2}$
- C. y^8
- D. y^{15}
- E. y^{125}

2. If a , b , and c are positive integers such that $a^b = x$ and $c^b = y$, then $xy = ?$

- A. ac^b
- B. ac^{2b}
- C. $(ac)^b$
- D. $(ac)^{2b}$
- E. $(ac)^{b^2}$

3. For any nonzero value of y , $(y^{-5})^3 = ?$

4. $3x^5 \cdot 7x^9$ is equivalent to:

- A. $10x^4$
- B. $10x^{14}$
- C. $10x^{45}$
- D. $21x^{14}$
- E. $21x^{45}$

2 △ △ △ △ △ △ △ △ 2

MATHEMATICS TEST

60 Minutes—60 Questions

DIRECTIONS: Solve each of the problems in the time allowed, then fill in the corresponding bubble on your answer sheet. Do not spend too much time on any one problem; skip the more difficult problems and go back to them later.

You may use a calculator on this test. For this test you should assume that figures are NOT necessarily drawn to scale, that all geometric figures lie in a plane, and that the word *line* is used to indicate a straight line.

DO YOUR FIGURING HERE.

1. The minimum fine for driving in excess of the speed limit is \$25. An additional \$6 is added to the minimum fine for each mile per hour (mph) in excess of the speed limit. Rachel was issued a \$103 fine for speeding in a 55-mph speed limit zone. For driving at what speed, in mph, was Rachel fined?
 - A. 48
 - B. 52
 - C. 62
 - D. 68
 - E. 78
2. $5x^3 \times 2xy \times 3xy^2$ is equivalent to:
 - F. $10x^3y^2$
 - G. $10x^5y^3$
 - H. $30x^5y^3$
 - J. $30x^3y^3$
 - K. $30x^5y^2$
3. What is the fourth term in the arithmetic sequence 13, 10, 7, ...?
 - A. 14
 - B. 9
 - C. 4
 - D. 0
 - E. -7
4. When written in symbols, "the product of r and s , raised to the fourth power," is represented as:
 - F. r^4s^4
 - G. $(r+s)^4$
 - H. $(rs)^4$
 - J. $\frac{r^4}{s^4}$
 - K. rs^4








GO ON TO THE NEXT PAGE.

2         **2**

DO YOUR FIGURING HERE.

5. Which of the following numbers has the digit 5 in the thousandths place?
- A. 5,000.00
B. 50.0
C. 0.05
D. 0.005
E. 0.0005
6. Mandy and Jordan each bought some of the same notebooks and the same three-ring binder. Mandy paid \$5.85 for 3 notebooks and 1 binder. Jordan paid \$4.65 for 2 notebooks and 1 binder. What is the price of one of the notebooks?
- F. \$2.70
G. \$2.25
H. \$1.80
J. \$1.20
K. \$0.75
7. If $mn = k$ and $k = x^2n$, and $nk \neq 0$, which of the following is equal to m ?
- A. 1
B. $1/x$
C. \sqrt{x}
D. x
E. x^2
8. If $7x + 5 = 2x + 9$, then $x = ?$
- F. $\frac{4}{5}$
G. $1\frac{4}{5}$
H. $\frac{4}{9}$
J. $1\frac{4}{9}$
K. 2
9. What percent of 5 is 7?
- A. 14%
B. 35%
C. 71%
D. 140%
E. 157%

GO ON TO THE NEXT PAGE.

2         **2**

DO YOUR FIGURING HERE.

10. If x is a positive real number such that $x^2 = 16$, then $x^3 + \sqrt{x} = ?$
- F. 18
G. 20
H. 66
J. 68
K. 74
11. $-|-16| - (-16) = ?$
- A. -16
B. 0
C. 4
D. 16
E. 32
12. A partial deck of cards was found sitting out on a table. If the partial deck consists of 6 spades, 3 hearts, and 7 diamonds, what is the probability of randomly selecting a red card from this partial deck? (Note: diamonds and hearts are considered "red," while spades and clubs are considered "black.")
- F. $\frac{9}{16}$
G. $\frac{13}{16}$
H. $\frac{7}{16}$
J. $\frac{3}{8}$
K. $\frac{5}{8}$
13. Which of the following is a simplified form of $4x - 4y + 3x$?
- A. $x(7 - 4y)$
B. $x - y + 3x$
C. $-8xy + 3x$
D. $7x - 4y$
E. $-4y - x$

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2         2

DO YOUR FIGURING HERE.

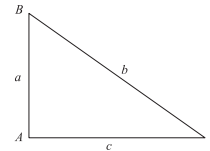
14. Gary has turtles, cats, and birds for pets. The number of birds he has is 4 more than the number of turtles, and the number of cats is 2 times the number of birds. Of the following, which could be the total number of Gary's pets?
 F. 14
 G. 18
 H. 20
 J. 22
 K. 26
15. On a map, $\frac{1}{4}$ inch represents 12 miles. If a road is 66 miles long, what is its length, in inches, on the map?
 A. $5\frac{1}{2}$
 B. $5\frac{1}{8}$
 C. $1\frac{1}{2}$
 D. $1\frac{3}{8}$
 E. $\frac{7}{8}$
16. If $b = a - 4$, then $(a - b)^3 = ?$
 F. 64
 G. 16
 H. -4
 J. -16
 K. -64
17. If g is an integer, which of the following could NOT equal g^2 ?
 A. 0
 B. 1
 C. 4
 D. 8
 E. 9
18. Justin owns 6 different dress shirts, 3 different pairs of pants, and 5 different ties. How many distinct outfits, each consisting of a shirt, a pair of pants, and a tie, can Justin make?
 F. 14
 G. 42
 H. 90
 J. 120
 K. 144
19. An oil refinery produces gasoline from crude oil. For every 10,000 barrels of crude oil supplied, the refinery can produce 6,500 barrels of gasoline. How many barrels of gasoline can be produced from 3,500 barrels of crude oil?
 A. 1,265
 B. 1,750
 C. 2,125
 D. 2,275
 E. 5,385

GO ON TO THE NEXT PAGE.

2         2

DO YOUR FIGURING HERE.

20. What is the slope of a line that passes through the origin and the point $(-6, 2)$?
 F. 3
 G. $\frac{1}{3}$
 H. $-\frac{1}{3}$
 J. -3
 K. -6
21. If $n^x \cdot n^8 = n^{24}$ and $(n^6)^y = n^{18}$, what is the value of $x + y$?
 A. 7
 B. 9
 C. 12
 D. 19
 E. 27
22. What is the slope-intercept form of $9x + 3y - 6 = 0$?
 F. $y = 9x - 6$
 G. $y = 3x + 2$
 H. $y = 3x - 2$
 J. $y = -3x + 2$
 K. $y = -9x + 6$
23. If the volume of a cube is 64, what is the shortest distance from the center of the cube to the base of the cube?
 A. 2
 B. 4
 C. $2\sqrt{4}$
 D. $\sqrt{32}$
 E. 16
24. For the right triangle $\triangle ABC$ shown below, what is $\sin C$?



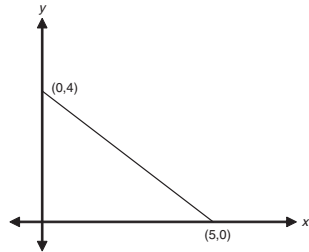
- F. $\frac{a}{b}$
 G. $\frac{a}{c}$
 H. $\frac{b}{a}$
 J. $\frac{c}{b}$
 K. $\frac{c}{a}$

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25. What is the area, in coordinate units, of the triangle in the figure below?

DO YOUR FIGURING HERE.



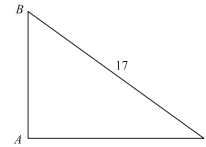
- A. 4.5
 - B. 9.0
 - C. 10.0
 - D. 12.5
 - E. 20.0
26. A shoe store charges \$39 for a certain type of sneaker. This price is 30% more than the amount it costs the shoe store to buy one pair of these sneakers. At an end-of-the-year sale, sales associates can purchase any remaining sneakers at 20% off the shoe store's cost. How much would it cost an employee to purchase a pair of sneakers of this type during the sale (excluding sales tax)?
- F. \$31.20
 - G. \$25.00
 - H. \$24.00
 - J. \$21.84
 - K. \$19.50
27. After excavating a lot, workers removed an estimated 7,000 cubic yards of dirt from the area. If this dirt were spread in an even layer over an empty lot with dimensions 30 yards by 64 yards, about how deep, in yards, would the layer of dirt be?
- A. Less than 1
 - B. Between 1 and 2
 - C. Between 2 and 3
 - D. Between 3 and 4
 - E. More than 4

GO ON TO THE NEXT PAGE.



28. The hypotenuse of the right triangle $\triangle ABC$ shown below is 17 feet long. The cosine of angle C is $\frac{3}{5}$. How many feet long is the segment AC ?

DO YOUR FIGURING HERE.



- F. 6
 - G. 10.2
 - H. 12
 - J. 15
 - K. 28.3
29. When the choir is arranged in rows of 5 people each, the last row is one person short. When the choir is arranged in rows of 6 people each, the last row is still one person short. What is the least possible number of people in the choir?
- A. 29
 - B. 30
 - C. 56
 - D. 60
 - E. 99
30. What is the y-coordinate of the point in the standard (x,y) coordinate plane at which the 2 lines $y = \frac{x}{2} + 3$ and $y = 3x - 2$ intersect?
- F. 5
 - G. 4
 - H. 3
 - J. 2
 - K. 1
31. Points B and C lie on segment AD as shown below. Segment AD is 32 units long, segment AC is 23 units long, and segment BD is 27 units long. How many units long, if it can be determined, is segment BC ?



- A. 21
- B. 18
- C. 9
- D. 4
- E. Cannot be determined from the given information.

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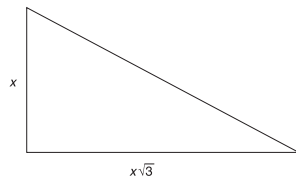


32. For all pairs of real numbers M and N where $M = 6N + 5$, $N = ?$

DO YOUR FIGURING HERE.

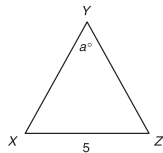
- F. $\frac{M}{6} - 5$
- G. $\frac{M}{5} + 6$
- H. $6M + 5$
- J. $\frac{M - 5}{6}$
- K. $\frac{M + 5}{6}$

33. In the figure below, the perimeter of the triangle is $12 + 4\sqrt{3}$ inches. What is the value of x , in inches?



- A. 2
- B. 4
- C. 6
- D. 8
- E. 12

34. In the figure below, $\overline{XY} = \overline{YZ}$. If $a = 40^\circ$, then $\overline{XY} = ?$



- F. 9.50
- G. 8.75
- H. 7.75
- J. 6.25
- K. 5.50

GO ON TO THE NEXT PAGE.



35. In the (x, y) coordinate plane, what is the y -intercept of the line $-9x - 3y = 15$?

DO YOUR FIGURING HERE.

- A. -9
- B. -5
- C. -3
- D. 3
- E. 15

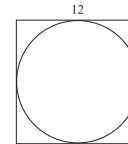
36. The product of two integers is between 137 and 149. Which of the following CANNOT be one of the integers?

- F. 15
- G. 13
- H. 11
- J. 10
- K. 7

37. When x is divided by 7, the remainder is 4. What is the remainder when $2x$ is divided by 7?

- A. 1
- B. 4
- C. 5
- D. 7
- E. 8

38. A circle is circumscribed within a square with sides of 12 feet, as shown below. What is the area of the circle, to the nearest square foot?



- F. 144
- G. 113
- H. 72
- J. 12π
- K. 3π

39. The average of 7 consecutive numbers is 16. What is the sum of the least and greatest of the 7 integers?

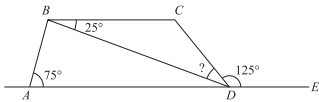
- A. 13
- B. 14
- C. 16
- D. 19
- E. 32

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40. In the figure below, $ABCD$ is a trapezoid. Point E lies on line AD , and angle measures are as marked. What is the measure of angle BDC ?

DO YOUR FIGURING HERE.



- F. 25°
 - G. 30°
 - H. 45°
 - J. 55°
 - K. 100°
41. For which of the following functions is $f(-5) > f(5)$?
- A. $f(x) = 6x^2$
 - B. $f(x) = 6$
 - C. $f(x) = 6/x$
 - D. $f(x) = 6 - x^3$
 - E. $f(x) = x^6 + 6$
42. For what value of n would the following system of equations have an infinite number of solutions?
- $$3a + b = 12$$
- $$12a + 4b = 3n$$
- F. 4
 - G. 9
 - H. 16
 - J. 36
 - K. 48
43. If x and y are positive integers such that the greatest common factor of x^2y^2 and xy^3 is 27, then which of the following could y equal?
- A. 81
 - B. 27
 - C. 18
 - D. 9
 - E. 3

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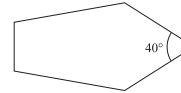


44. What is the smallest possible integer for which 15% of that integer is greater than 2.3?
- F. 3
 - G. 12
 - H. 15
 - J. 16
 - K. 18

DO YOUR FIGURING HERE.

45. What is the distance in the standard (x,y) coordinate plane between the points $(0,1)$ and $(4,4)$?
- A. $\sqrt{7}$
 - B. 3
 - C. 4
 - D. 5
 - E. $\sqrt{27}$
46. The sides of a triangle are 9, 12, and 15 centimeters long. What is the angle between the 2 shortest sides?
- F. 180°
 - G. 90°
 - H. 60°
 - J. 45°
 - K. 30°

47. In the pentagon, shown below, one interior angle measures 40° . What is the total measure of the other 4 interior angles?



- A. 120°
 - B. 160°
 - C. 320°
 - D. 500°
 - E. 680°
48. For real numbers r and s , when is the equation $|r - s| = |r + s|$ true?
- F. Always
 - G. Only when $r = s$
 - H. Only when $r = 0$ or $s = 0$
 - J. Only when $r > 0$ and $s < 0$
 - K. Never

GO ON TO THE NEXT PAGE.

2         2

49. What is the value of $\log_4 64$?

A. 3
B. 4
C. 8
D. 10
E. 16

50. How many different positive three-digit integers can be formed if the three digits 3, 4, and 5 must be used in each of the integers?

F. 6
G. 8
H. 12
J. 15
K. 24

51. Which of the following is the set of all real numbers x such that $x - 3 < x - 5$?

A. The empty set
B. The set containing only zero
C. The set containing all nonnegative real numbers
D. The set containing all negative real numbers
E. The set containing all real numbers

52. What is the slope of a line that is perpendicular to the line determined by the equation $7x + 4y = 11$?

F. -4
G. $-\frac{7}{4}$
H. $\frac{11}{4}$
J. 4
K. $\frac{4}{7}$

53. If each element in a data set is multiplied by 3, and each resulting product is then reduced by 4, which of the following expressions gives the mean of the resulting data set in terms of x ?

A. x
B. $3x - 4$
C. $x + \frac{4}{3}$
D. $\frac{x}{3} + 4$
E. $x + \frac{4}{3}$

DO YOUR FIGURING HERE.

GO ON TO THE NEXT PAGE.

2         2

54. If $\cos \theta = -\frac{3}{5}$ and $\frac{\pi}{2} < \theta < \pi$, then $\tan \theta = ?$

F. $-\frac{5}{4}$
G. $-\frac{4}{3}$
H. $-\frac{3}{5}$
J. $\frac{3}{4}$
K. $\frac{4}{3}$

55. The City Council has approved the construction of a circular pool in front of City Hall. The area available for the pool is a rectangular region 12 feet by 18 feet, surrounded by a brick wall. If the pool is to be as large as possible within the walled area, and edge of the pool must be at least 2 feet from the wall all around, how many feet long should the radius of the pool be?

A. 14
B. 10
C. 7
D. 5
E. 4

56. Kate rode her bicycle to visit her grandmother. The trip to Kate's grandmother's house was mostly uphill, and took m minutes. On the way home, Kate rode mostly downhill and was able to travel at an average speed twice that of her trip to her grandmother's house. Which of the following expresses the total number of minutes that Kate bicycled on her entire trip?

F. $3m$
G. $2m$
H. $m + \frac{1}{2}$
J. $\frac{3m}{2}$
K. $\frac{m}{2}$

57. Let n equal $3a + 2b - 7$. What happens to the value of n if the value of a increases by 2 and the value of b decreases by 1?

A. It is unchanged.
B. It decreases by 1.
C. It increases by 4.
D. It decreases by 4.
E. It decreases by 2.

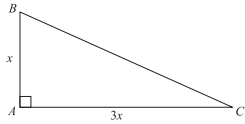
DO YOUR FIGURING HERE.

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2         2

58. In the figure below, $\triangle ABC$ is a right triangle with legs that measure x and $3x$ inches, respectively. What is the length, in inches, of the hypotenuse?

DO YOUR FIGURING HERE.



- F. $\sqrt{10}x$
 G. $\sqrt{3}x$
 H. $\sqrt{2}x$
 J. $2x$
 K. $4x$
59. If the edges of a cube are tripled in length to produce a new, larger cube, then the larger cube's surface area is how many times larger than the smaller cube's surface area?
 A. 3
 B. 9
 C. 18
 D. 27
 E. 54
60. Considering all values of a and b for which $a + b$ is at most 9, a is at least 2, and b is at least -2 , what is the minimum value of $b - a$?
 F. 0
 G. -7
 H. -11
 J. -13
 K. -15

END OF THE MATHEMATICS TEST.

STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.

2         2

MATHEMATICS TEST

60 Minutes—60 Questions

DIRECTIONS: Solve each of the problems in the time allowed, then fill in the corresponding bubble on your answer sheet. Do not spend too much time on any one problem; skip the more difficult problems and go back to them later. You may use a calculator on this test.

For this test you should assume that figures are NOT necessarily drawn to scale, that all geometric figures lie in a plane, and that the word *line* is used to indicate a straight line.

DO YOUR FIGURING HERE.

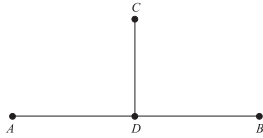
1. The lowest temperature on a winter morning was -7°F . Later the same day the temperature reached a high of 2°F . By how many degrees Fahrenheit did the temperature increase?
 A. 32
 B. 28
 C. 21
 D. 14
 E. 7
2. Disregarding sales tax, how much will you save when you buy a \$12.00 video that is on sale for 20% off?
 F. \$0.24
 G. \$0.48
 H. \$1.20
 J. \$2.40
 K. \$3.60
3. As part of a school report on the cost of gasoline, Raquel wants to find the average cost of purchasing a gallon of regular unleaded gasoline from local gas stations. She surveys 4 stations and finds the cost per gallon of regular unleaded gas from the 4 stations to be \$2.45, \$2.50, \$2.49, and \$2.56, respectively. Using this data, what is the average cost of purchasing one gallon of regular unleaded gasoline from these 4 gas stations?
 A. \$2.55
 B. \$2.53
 C. \$2.50
 D. \$2.49
 E. \$2.45
4. What is the volume, in cubic inches, of a cube whose edges each measure 5 inches in length?
 F. 15
 G. 25
 H. 50
 J. 125
 K. 500
5. If $3(a - 6) = -21$, then $a = ?$
 A. -9
 B. $-\frac{3}{2}$
 C. -1
 D. $\frac{7}{3}$
 E. 5

GO ON TO THE NEXT PAGE.

2         2

DO YOUR FIGURING HERE.

6. The price of a cantaloupe is directly proportional to its weight. If a cantaloupe that weighs 3.0 pounds costs \$3.87, approximately how much will a 2.25-pound cantaloupe cost?
- F. \$2.90
G. \$2.65
H. \$2.25
J. \$1.87
K. \$1.29
7. In the figure below, D is a point on segment AB , and the segment CD is perpendicular to the segment AB . Based on this information, which of the following conclusions can be made?



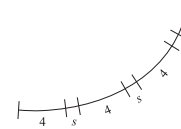
- A. Point C is equidistant from A to B .
B. Segments AD and DB are equal in length.
C. The segment CD bisects the segment AB .
D. Angle CDA is larger than angle CDB .
E. Angle CDA is congruent to angle CDB .
8. If $6x - 5 = 3x - 16$, then $x = ?$
- F. -11
G. -7
H. $-\frac{11}{3}$
J. $\frac{11}{3}$
K. 7
9. Which of the following is always equal to $y(3 - y) + 5(y - 7)$?
- A. $8y - 35$
B. $8y - 7$
C. $-y^2 + 8y - 7$
D. $-y^2 + 8y - 35$
E. $8y^3 - 35$

GO ON TO THE NEXT PAGE.

2         2

DO YOUR FIGURING HERE.

10. The figure below shows part of a circle whose circumference is 40. If arcs of length 4 and length s continue to alternate around the entire circle so that there are 8 arcs of each length, what is the degree measure of each of the arcs of length s ?



- F. 6°
G. 9°
H. 12°
J. 18°
K. 36°
11. In a poll, 44 people were in favor of constructing a new high school, 58 were against it, and 8 people had no opinion. What fraction of those people polled were in favor of constructing a new high school?
- A. $\frac{1}{9}$
B. $\frac{1}{5}$
C. $\frac{2}{5}$
D. $\frac{3}{5}$
E. $\frac{4}{9}$
12. On the line segment below, the ratio of lengths AB to BC is 1:4. What is the ratio of AB to AC ?
-
- F. 1:5
G. 1:4
H. 1:3
J. 5:1
K. Cannot be determined from the given information
13. If a board 9 feet 6 inches in length is cut into 2 equal parts, what will be the length of each part?
- A. 3 feet 8 inches
B. 4 feet 5 inches
C. 4 feet 8 inches
D. 4 feet 9 inches
E. 5 feet 2 inches

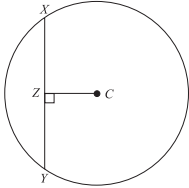
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14. The speed of a car exceeds twice the speed of a truck by 15 mph. If t is the speed of the truck, which of the following expresses the speed, in miles per hour, of the car?
- F. $t + 15$
 G. $t + 30$
 H. $t - 30$
 J. $2t + 15$
 K. $2t + 30$

DO YOUR FIGURING HERE.

15. The circle shown below has a radius of 5 meters, and the length of chord XY is 8 meters. If C marks the center of the circle, what is the length, in meters, of segment CZ ?



- A. $2\sqrt{3}$
 B. 3
 C. $\sqrt{13}$
 D. 5
 E. 9
16. What is the value of the expression $2x^3 - x^2 + 3x + 5$ for $x = -2$?
- F. -21
 G. -13
 H. 8
 J. 11
 K. 21
17. What is the next term after $-\frac{1}{3}$ in the geometric sequence $9, -3, 1, -\frac{1}{3}, \dots$?
- A. $-\frac{1}{9}$
 B. 0
 C. $\frac{1}{9}$
 D. $\frac{1}{6}$
 E. $\frac{1}{3}$

GO ON TO THE NEXT PAGE.

2         2

18. On the blueprint for Roger's house, $\frac{1}{4}$ inch represents an actual length of 1 foot. What is the area, in square feet, of Roger's rectangular living room, which is 3 inches by $4\frac{1}{4}$ inches on the blueprint?
- F. 51
 G. 104
 H. 144
 J. 204
 K. 244

DO YOUR FIGURING HERE.

19. If $m > 0$ and $n < 0$, then $m - n$:
- A. is always positive.
 B. is always negative.
 C. is always zero.
 D. cannot be zero, but can be any real number other than zero.
 E. can be any real number.
20. If $x + \frac{2}{3} = \frac{8}{21}$, then $x = ?$
- F. $-\frac{8}{21}$
 G. $-\frac{2}{7}$
 H. $-\frac{1}{21}$
 J. $\frac{1}{21}$
 K. $\frac{2}{7}$
21. What is the slope of the line given by the equation $3x + 4y = -12$?
- A. -3
 B. $-\frac{4}{3}$
 C. $-\frac{3}{4}$
 D. $\frac{3}{4}$
 E. 4
22. The length of a side of a square is represented as $(3x - 2)$ inches. Which of the following general expressions represents the area of the square, in square inches?
- F. $12x - 8$
 G. $9x^2 - 4$
 H. $9x^2 - 6x + 4$
 J. $9x^2 - 12x - 4$
 K. $9x^2 - 12x + 4$
23. Which of the following is a polynomial factor of $x^2 - 2x - 24$?
- A. $x - 4$
 B. $x + 4$
 C. $x + 6$
 D. $6 - x$
 E. x

GO ON TO THE NEXT PAGE.



24. In the equation $r = \frac{4}{(2+k)}$, k represents a positive integer. As k gets larger without bound, the value of r :
- F. gets closer and closer to 4.
G. gets closer and closer to 2.
H. gets closer and closer to 0.
J. remains constant.
K. gets larger and larger.
25. While doing research on the climates of South American countries, Andrea notices that all of the temperatures are given in degrees Celsius. Because she is not as familiar with the Celsius temperature scale, it is difficult for her to know whether a location with an average temperature of 25°C has a warm climate. Fahrenheit, F , and Celsius, C , are related by the formula $F = \left(\frac{9}{5}\right)C + 32$. What is the temperature in degrees Fahrenheit of the location with an average temperature of 25°C ?
- A. 103
B. 88
C. 83
D. 77
E. 69
26. The length of a rectangle is 5 inches longer than its width. If the perimeter of the rectangle is 38 inches, what is the width, in inches?
- F. 5
G. 7
H. 12
J. 17
K. 28
27. What are all the solutions for x if $3x^2 - 2x - 21 = 0$?
- A. $x = -21$ only
B. $x = -7$ or $x = 3$
C. $x = -3$ or $x = \frac{7}{3}$
D. $x = -\frac{7}{3}$ or $x = 3$
E. $x = -3$ or $x = 7$
28. In Sulema's geography class, all tests count equally. So far, Sulema has taken 2 of the 3 tests in geography this marking period and earned scores of 88% and 79%, respectively. What is the minimum score Sulema needs on the third test to have a test average of 87%?
- F. 99%
G. 94%
H. 91%
J. 87%
K. 84%
29. If a , b , and c are positive integers such that $a^b = m$ and $c^{2b} = n$, then $mn = ?$
- A. $(ac^2)^b$
B. $(ac)^{3b}$
C. $2(ac)^b$
D. ac^{2b}
E. $d^b c$

DO YOUR FIGURING HERE.


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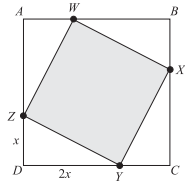
30. What is the area, in square inches, of a circle with a diameter equal to 12 inches?
- F. 144
G. 36
H. 12π
J. 36π
K. 144π
31. In Mrs. Hartley's foreign language class, students must take both a written exam and an oral exam. In the past, 85% of her students passed the written exam and 70% of those who passed the written exam also passed the oral exam. Based on these figures, about how many students in a random group of 100 students would you expect to pass both exams?
- A. 85
B. 78
C. 70
D. 65
E. 60
32. If $\sin A = \frac{3}{5}$, then which of the following could be $\tan A$?
- F. $\frac{1}{4}$
G. $\frac{3}{4}$
H. 1
J. $\frac{4}{3}$
K. 4
33. If x is any number other than 3 and 6, then $\frac{(x-3)(x-6)}{(3-x)(x-6)} = ?$
- A. 18
B. 1
C. 0
D. -1
E. -18
34. $\sqrt{27} + \sqrt{48} = ?$
- F. $5\sqrt{3}$
G. $7\sqrt{3}$
H. $3\sqrt{3} + 3\sqrt{4}$
J. $12\sqrt{3}$
K. $3 + 4\sqrt{3}$
35. $\triangle ABC$ is similar to $\triangle XYZ$. AB is 5 inches long, BC is 8 inches long, and AC is 3 inches long. If the longest side of $\triangle XYZ$ is 20 inches long, what is the perimeter, in inches, of $\triangle XYZ$?
- A. 16
B. 28
C. 40
D. 64
E. 88

DO YOUR FIGURING HERE.

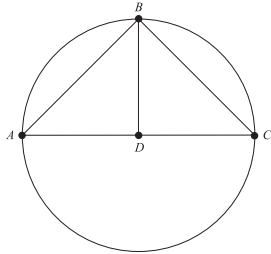
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36. Sides \overline{AB} , \overline{BC} , \overline{CD} , and \overline{DA} of square $ABCD$ are broken up by points W , X , Y , and Z as shown below. If \overline{AB} is 6 inches long, what is the area, in square inches, of the shaded region?



- F. 36
G. 32
H. 20
J. 16
K. 12
37. In the figure below, AC is the diameter of the circle, B is a point on the circle, AB is congruent to BC , and D is the midpoint of AC . What is the degree measure of angle ABD ?



- A. 30°
B. 45°
C. 60°
D. 90°
E. Cannot be determined from the given information

DO YOUR FIGURING HERE.

GO ON TO THE NEXT PAGE.

2         2

38. In the standard (x,y) coordinate plane, what are the coordinates of the midpoint of a line segment with endpoints $(-1,3)$ and $(2,5)$?
- F. $(1,8)$
G. $(3,2)$
H. $(\frac{3}{2}, 1)$
J. $(\frac{1}{2}, 4)$
K. $(\frac{3}{2}, 4)$
39. Maria posted a time of 37 minutes and 29 seconds for a 5-mile running course. About how many miles per hour did she average during the run?
- A. 12
B. 10
C. 8
D. 7
E. 5
40. For the 2 functions $f(x)$ and $g(x)$, tables of values are shown below. What is the value of $g(f(-1))$?

x	$f(x)$	x	$g(x)$
-3	-6	1	0
-1	2	2	3
1	-3	3	8
3	9	4	15

- F. -3
G. 0
H. 2
J. 3
K. 8
41. For positive real numbers x , y , and z , which of the following expressions is equivalent to $x^{\frac{1}{2}}y^{\frac{3}{4}}z^{\frac{5}{8}}$?
- A. $\sqrt[4]{xy^3z^5}$
B. $\sqrt[8]{x^2y^3z^5}$
C. $\sqrt[4]{x^4y^3z^5}$
D. $\sqrt[8]{x^4y^6z^5}$
E. $\sqrt[4]{xy^3z^5}$

DO YOUR FIGURING HERE.

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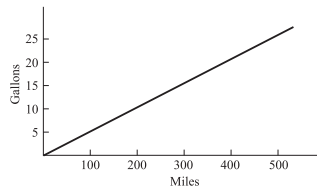
2         2

42. The formula for the area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$, where b_1 and b_2 are the lengths of the two parallel sides and h is the height. Which of the following is an expression for b_1 ?

DO YOUR FIGURING HERE.

- F. $\frac{2A}{h} - b_2$
 G. $\frac{2A}{h + b_2}$
 H. $\frac{2h}{A - b_2}$
 J. $2(Ah - b_2)$
 K. $\frac{1}{2}Ah + b_2$

43. The line graphed below shows the predicted gasoline use for a certain truck. Which of the following is the closest estimate of this truck's predicted rate of gasoline use, in miles per gallon?



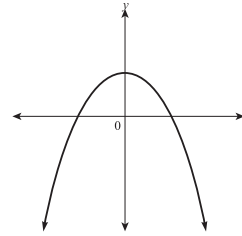
- A. 25
 B. 20
 C. 16
 D. 10
 E. 8

GO ON TO THE NEXT PAGE.

2         2

44. The graph of $y = ax^2 + bx + c$ in the standard (x,y) coordinate plane is shown below. When $y = 0$, which of the following best describes the solution set for x ?

DO YOUR FIGURING HERE.



- F. 2 imaginary solutions
 G. 1 double imaginary solution
 H. 1 real and 1 imaginary solution
 J. 1 double imaginary solution
 K. 2 real solutions
45. If $|x| = x + 12$, then $x = ?$
- A. -12
 B. -6
 C. 0
 D. 6
 E. 12

46. What fraction lies exactly halfway between $\frac{1}{3}$ and $\frac{1}{2}$?
- F. $\frac{3}{8}$
 G. $\frac{11}{24}$
 H. $\frac{5}{12}$
 J. $\frac{1}{6}$
 K. $\frac{2}{5}$

47. When entering information about the budget of her charity ball, Laura records an expense of \$20.00. However, Laura accidentally enters the \$20.00 as income instead of an expense. The balance of the charity ball budget now shows:
- A. \$40 less than it should.
 B. \$20 less than it should.
 C. the correct amount.
 D. \$20 more than it should.
 E. \$40 more than it should.

GO ON TO THE NEXT PAGE.

2         2

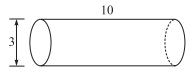
48. Rebecca is trying to schedule volunteers to help at a school carnival. There are 5 one-hour shifts to be filled by 5 different volunteers. If each shift must have one and only one volunteer, how many different arrangements can the schedule have?

F. 5
G. 20
H. 25
J. 50
K. 120

49. In the standard (x,y) coordinate plane, what is the distance between the points $(4,-7)$ and $(-1,5)$?

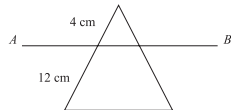
A. 5
B. 12
C. 13
D. 20
E. 26

50. A formula for the volume, V , of a right circular cylinder is $V = \pi r^2 h$, where r is the radius and h is the height. If a tanker truck has a tank as shown below with a diameter of 3 meters and a length of 10 meters and is filled with water, then the weight, in pounds, of the water cargo is: (Note: 1 cubic meter of water weighs approximately 2,205 pounds.)



F. less than 75,000.
G. between 75,000 and 175,000.
H. between 175,000 and 225,000.
J. between 225,000 and 275,000.
K. more than 275,000.

51. In the figure below, line AB is parallel to the base of the triangle and creates a smaller triangle inside of the original triangle. If the lengths of segments are as shown and the smaller triangle has an area of 8 cm^2 , what is the area, in centimeters, of the original triangle?



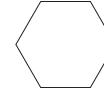
A. 16
B. 24
C. 32
D. 64
E. 128

DO YOUR FIGURING HERE.

GO ON TO THE NEXT PAGE.

2         2

52. The figure below is a regular hexagon. What is the measure of one of the interior angles of the hexagon?



F. 108°
G. 120°
H. 135°
J. 150°
K. 720°

53. It is estimated that, from the beginning of 1993 to the end of 1997, the average number of CDs bought by teenagers increased from 7 per year to 15 per year. During the same time period, the average number of video games purchased by teenagers increased from 6 per year to 18 per year. Assuming that in each case the rates or purchase are the same, in what year did teenagers buy the same average number of CDs and video games?

A. 1993
B. 1994
C. 1995
D. 1996
E. 1997

54. If $x^2 - 45b^2 = 4xb$, what are the 2 solutions for x in terms of b ?

F. $15b$ or $-3b$
G. $5b$ or $-9b$
H. $15b$ or $3b$
J. $45b$ or $-4b$
K. $9b$ or $-5b$

55. Which of the following is (are) equivalent to the mathematical operation $a(b - c)$ for all real numbers a , b , and c ?

I. $ca - ba$
II. $ab - ac$
III. $(b - c)a$
A. II only
B. I and II only
C. I and III only
D. II and III only
E. I, II and III

DO YOUR FIGURING HERE.

GO ON TO THE NEXT PAGE.

2 △ △ △ △ △ △ △ △ 2

56. For values of x where $\sin x$, $\cos x$, and $\tan x$ are all defined, $\frac{(\cos x)}{(\tan x)(\sin x)} = ?$

DO YOUR FIGURING HERE.

- F. $\frac{\cos^2 x}{\sin^2 x}$
 G. $\tan^2 x$
 H. 1
 J. $\sin^2 x$
 K. $\sec x$

57. If a is inversely proportional to b and $a = 36$ when $b = 12$, what is the value of a when $b = 48$?

- A. 0
 B. $\frac{1}{3}$
 C. $\frac{1}{4}$
 D. 4
 E. 9

58. For which of the following values of c will there be 2 distinct real solutions to the equation $5x^2 + 16x + c = 0$?

- F. 3
 G. 12
 H. 14
 J. 15
 K. 20

59. If the volume of a cube is 64, what is the shortest distance from the center of the cube to the base of the cube?

- A. 2
 B. 4
 C. $2\sqrt{4}$
 D. $\sqrt{32}$
 E. 16

60. What is the slope of a line that is perpendicular to the line determined by the equation $5x + 8y = 17$?

- F. $-\frac{3}{8}$
 G. $-\frac{5}{8}$
 H. $\frac{17}{8}$
 J. $\frac{3}{17}$
 K. $\frac{8}{5}$

END OF THE MATHEMATICS TEST.

STOP! IF YOU HAVE TIME LEFT OVER, CHECK YOUR WORK ON THIS SECTION ONLY.

Algebra II Assignment Answers

April 30th

MATH ALGEBRA REVIEW

Simple Equations: $x = 5$ $x = 2, 3$

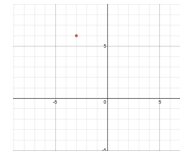
Difference of Squares: $(x - 3)(x + 3)$ $4(x + 2)(x - 2)$

Quadratic Formula: $x = \frac{5 \pm \sqrt{109}}{6}$

Multiplying Binomials: $14x^2 + 17x - 6$

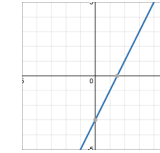
Graphing a point:

$(-3, 6)$

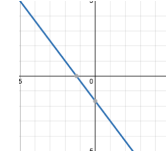


Graphing a Line:

$y = 2x - 3$



$4x + 3y + 5 = 0$



Slope of a line: -2

Slopes of parallel lines **are the same.**

Slopes of perpendicular lines are **opposite reciprocals.**

Distance Formula: 10

Midpoint Formula: (1, 4)

1. B

2. D

3. C

5. D

May 1st

MATH SOLVING PERCENT

1. 4.16% 2. 4.5 3. 32

4. D

5. B

MATH SOLVING AVERAGES

1. 68 2. 62 3. 67

4. 19

5. 21

MATH RULES OF MONOMIALS

1. $-9a^4$ 2. C 3. A

4. D

May 4th

ACT PRACTICE TEST 3

1. D 2. J 3. C 4. H 5. D

6. J 7. E 8. F 9. D 10. H

11. B 12. K 13. D 14. H 15. D

May 5th

ACT PRACTICE TEST 3

16. F 17. D 18. H 19. D

20. H 21. D 22. J 23. A

24. F 25. C 26. H 27. D

May 6th

ACT PRACTICE TEST 3

28. G 29. A 30. G 31. B
32. J 33. B 34. G 35. B
36. F 37. A 38. G 39. E

May 7th

ACT PRACTICE TEST 3

40. G 41. D 42. H 43. E 44. J
45. D 46. G 47. D 48. H 49. A
50. F 51. A 52. K 53. B

May 8th

ACT PRACTICE TEST 3

54. G 55. E 56. J 57. C
58. F 59. B 60. J

ACT PRACTICE TEST 6

1. B 2. J 3. C 4. J 5. C
6. F 7. E 8. H 9. D

May 12th

ACT PRACTICE TEST 6

10. G 11. C 12. F 13. D 14. J
15. B 16. F 17. C 18. J 19. A
20. G 21. C 22. K 23. B

May 13th

ACT PRACTICE TEST 6

24. H 25. D 26. G 27. D
28. G 29. A 30. J 31. E
32. G 33. D 34. G 35. C

May 14th

ACT PRACTICE TEST 6

36. H 37. B 38. J 39. C
40. J 41. D 42. F 43. B
44. K 45. B 46. H 47. E

May 15th

ACT PRACTICE TEST 6

48. K 49. C 50. G 51. C
52. G 53. B 54. K 55. D
56. F 57. E 58. F 59. A 60. K