

ACT Test Breakdown – Math

60 math questions in 60 minutes

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|----------------------|-----|
| Pre-Algebra | 23% |
| Elementary Algebra | 13% |
| Intermediate Algebra | 15% |
| Coordinate Geometry | 15% |
| Plane Geometry | 23% |
| Trigonometry | 7% |

Tips/Strategies for Math

- Try to do the easy questions in 5-10 seconds; that will free up some time for the harder problems.
- Circle important numbers and information as you are reading; draw and mark diagrams whenever possible.
- Don't be afraid to show work. It will help you focus on the task.
 - Solving algebraically is more efficient (time saving) than trying to guess.
- The questions start easier and get progressively more difficult.
- Do the ones that you know how to do first and focus on getting those correct. Go back and do the other ones at the end and if you can't figure it out give your best guess.
- Even though the diagrams say they are not to scale, they are. Estimate!
- Try to do the problems without looking at the answers first. Working backwards from the answers should be a last result.
- One strategy is to pick specific values for the variables to make the questions more concrete and less abstract.
- Always go back and answer the question. Many of the wrong answers are there because they represent a number in a calculation that wasn't carried out until the end.
- Use your graphing calculator to help you. It is helpful for: working with fractions and decimals, determining square root expressions are equivalent, graphing, solving with graphs or tables, putting two expressions in $Y=$ to determine equivalence, etc.
- If you don't know how to solve an equation algebraically, solve with a table or graph.
- Memorize formulas and know basic concepts (distance formula, midpoint formula, Quadratic Formula, Pythagorean Theorem, Pythagorean Triples, area formulas, volume formulas, special right triangles, right triangle trigonometry)
- If you have time, go back and check your work.
- Do the practice test at home timing yourself.

Prealgebra Reminders for the ACT

Mean (aka “average”), Median, and Mode

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| <p>Average = $\frac{\text{sum of values}}{\text{number of values}}$</p> <p>Sometimes you are given the average and need to find one of the values. Write an equation and use algebra!</p> | <p>Median – the middle value (after you put the numbers in order!)</p> | <p>Mode – the most common value</p> |
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Probability and Counting

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| <p>Probability of an event = $\frac{\text{number of success}}{\text{total number}}$</p> | <p>If one operation can be done in a ways and a second can be done in b ways, then the number of ways to do the first operation followed by the second is the product ab.</p> |
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Percents

| | | |
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| <p>Remember to change percents to their decimal equivalents when computing (ex: 8.25% = .0825)</p> <p>Translate the question to an equation and solve. <i>a number = percent * whole</i></p> <p>If you are adding a percent to the whole then multiply by (1 + percent).</p> <p>If you are subtracting a percent from the whole then multiply by (1 – percent).</p> | | |
| <p>Finding the number</p> <p>An item is \$3 now. If it goes on sale for 20% off, what is the sale price?</p> <p>$number = (1 - 0.20) * 3$</p> | <p>Finding the whole</p> <p>An item has a tax of 8% off and the total price is \$6.48. What is the regular price?</p> <p>$6.48 = (1 + 0.08) * whole$</p> | <p>Finding the percent</p> <p>A sales rep has a sales goal of 40 items. He sells 52 instead. The actual sales represent what percent of the goal?</p> <p>$52 = percent * 40$</p> |

Factors, GCFs, LCMs, LCDs, and Primes

| | | |
|---|--|--|
| Factors of 8: 1, 2, 4, 8 Factors of 12: 1, 2, 3, 4, 6, 12 | Common factors are 1, 2, 4 The greatest common factor is 4. | A number that has only factors of 1 and itself is prime. 0 and 1 are not considered prime. All other numbers that are not prime are composite. |
| Multiples of 8: 8, 16, 24, 32, 48... Multiples of 12: 12, 24, 36, 48... | Common multiples are 24, 48, ... The least common multiple is 24. | |
| We use the least common multiple when deciding what common denominator to use in order to add or subtract fractions. Thus, the least common denominator is the least common multiple of the denominators. | | |

Miscellaneous

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| <ul style="list-style-type: none"> Distance = rate * time Recognize proportional situations and set up proportions to find the missing value. An example is a question about how many degrees to use for a particular category when creating a circle graph. Remember that there are 360° in a circle. You may see things that you have never seen before—sometimes that is the idea! An example would be a question that begins “$a \square b = 2 + a + b - ab$”. You will need to either substitute values using the rule given or generalize about the results of the rule. |
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Calculator Tips

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| <p>Use parentheses around negative numbers and numerators and denominators.</p> <p>When you are using your calculator with a mixed number such as $2\frac{5}{8}$, enter as (2 + 5/8).</p> <p>You can enter numbers in scientific notation as you see them as long as you put them in parentheses prior to calculating.</p> |
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Prealgebra Practice for the ACT

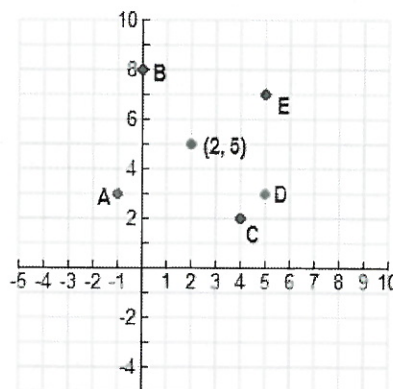
| | |
|---|--|
| <p>1. What is the least common denominator when adding the fractions $\frac{f}{3}$, $\frac{g}{4}$, $\frac{h}{8}$, and $\frac{j}{12}$?</p> <p>A. 24 B. 48 C. 64 D. 96 E. 288</p> | <p>2. Kareem has 4 sweaters, 6 shirts, and 3 pairs of slacks. How many distinct outfits, each consisting of a sweater, shirt, and a pair of slacks, can Kareem select.</p> <p>A. 13 B. 36 C. 42 D. 72 E. 216</p> |
| <p>3. If p is a factor of both 45 and 60, but not a factor of 9 nor 10, what should you get when you add the digits in p?</p> <p>A. 3 B. 2 C. 5 D. 6 E. 9</p> | <p>4. An oil tank contains 4,800 gallons of oil. Each gallon of oil weighs approximately 6 pounds. About how many pounds does the oil in the tank weigh?</p> <p>A. 800 B. 4,806 C. 6,000 D. 28,800 E. 46,800</p> |
| <p>5. John has taken 5 of the 6 equally weighted tests in his U. S. History class this semester and has earned the following scores: 90, 82, 60, 75, 83. How many points does he need to earn on the 6th test to bring his average score up to exactly 80.0 points?</p> <p>A. 90 B. 88 C. 82 D. 80 E. 78</p> | <p>6. A carton of 12 cans of soda is priced at \$6.60 now. If the soda goes on sale for 20% off the current price, what will be the price of the carton?</p> <p>A. \$0.55 B. \$1.32 C. \$5.28 D. \$6.36 E. \$6.40</p> |
| <p>7. If 75% of a number is 180, then what is 10% of the number?</p> <p>A. 2.4 B. 13.5 C. 24 D. 45 E. 240</p> | <p>8. On Monday a skirt was priced at \$60.00. On Wednesday, the price was reduced by 15%. Two weeks later, the price was further reduced by 20%. What percent of the original price is this last price?</p> <p>A. 35% B. 40% C. 51% D. 65% E. 68%</p> |

Algebra Practice for the ACT

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| <p>1. Which of the following is (are) equivalent to the mathematical operation $a(b + c)$ for all real numbers a, b, and c?</p> <p>I. $ca + ba$ II. $ab + ac$ III. $(b + c)a$</p> <p>A. I only B. II only C. III only D. I and II only E. I, II and III</p> | <p>2. Carrie has \$7 less than does her brother, Steve, who has d dollars. Carrie does not spend any money and earns \$3. Which of the following is an expression for the amount of money, in dollars, that Carrie has?</p> <p>A. $(d - 7) + 2$ B. $d + 4$ C. $d - (7 + 3)$ D. $d - 4$ E. $d - 7$</p> |
| <p>3. In the standard (x, y) coordinate plane, what is the slope of a line containing the points $(3, -8)$ and $(4, 7)$?</p> <p>A. $-\frac{1}{15}$ B. -1 C. $\frac{3}{7}$ D. 7 E. 15</p> | <p>4. If $q = 1$ and $s = 3$, what is the value of the expression $\frac{(q-s)}{3q}$?</p> <p>F. -1 G. $-\frac{2}{3}$ H. $\frac{2}{3}$ I. $\frac{4}{3}$ J. 4</p> |
| <p>5. What is the value of the expression $(x - y)^2$ when $x = 5$ and $y = -1$?</p> <p>A. 4 B. 6 C. 16 D. 24 E. 36</p> | <p>6. If $0.4x + 2.2 = x - 2$, then $x =$?</p> <p>A. 3 B. 6 C. 7 D. 10 E. 14</p> |
| <p>7. If $12x = -8(10 - x)$, then $x =$?</p> <p>F. 20 G. 8 H. $7\frac{3}{11}$ J. $6\frac{2}{13}$ K. -20</p> | <p>8. The value of x that will make $\frac{x}{2} + 1 = \frac{3}{4}$ a true statement lies between which of the following numbers?</p> <p>A. -3 and -1 B. -1 and 0 C. 0 and 1 D. 1 and 3 E. 3 and 5</p> |
| <p>9. What is the y-intercept of the line in the standard (x, y) coordinate plane that goes through the points $(-3, 6)$ and $(3, 2)$?</p> | <p>A. 0 B. 2 C. 4 D. 6 E. 8</p> |

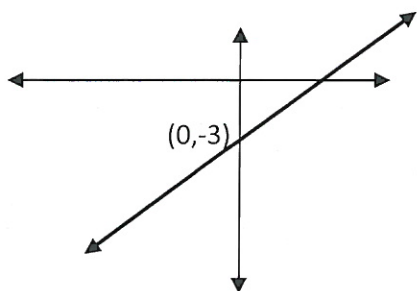
10. The point (2, 5) is shown in the standard (x, y) coordinate plane. Which of the following is another point on the line through the point (2, 5) with a slope of $-\frac{2}{3}$?

- A. (-1, 3)
- B. B (0, 8)
- C. C (4, 2)
- D. D (5, 3)
- E. E (5, 7)



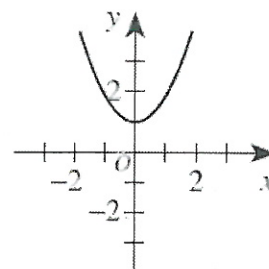
11. If a system of 2 linear equations in 2 variables has NO solution, and 1 of the equations is graphed in the (x,y) coordinate plane below, which of the following could be the equation of the other line?

- A. $y = -2$
- B. $y = -4x + 2$
- C. $y = -2x - 3$
- D. $y = 4x + 2$
- E. $y = 4x - 3$



12. The figure most closely resembles the graph of which of the following functions?

- A. $-x^2 + 1$
- B. $x^2 + 1$
- C. $x^2 - 1$
- D. $2x^2$
- E. $x^2 - 1$



13. What is the distance, in coordinate units, between the points (-3, 5) and (4, -1) in the standard (x, y) coordinate plane?

- A. $\sqrt{13}$
- B. $\sqrt{17}$
- C. $\sqrt{85}$
- D. 13
- E. 85

Try this matrix problem...

14. The number of students participating in fall sports at a certain high school can be shown by the following matrix.

| Tennis | Soccer | Cross Country | Football |
|--------|--------|---------------|----------|
| [40 | 60 | 80 | 80] |

The athletic director estimates the ratio of the number of sports awards that will be earned to the number of students participating with the following matrix.

| Tennis | [0.3 |
|---------------|------|
| Soccer | 0.4 |
| Cross Country | 0.2 |
| Football | 0.5] |

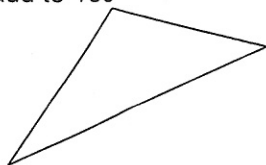
Given these matrices, what is the athletic director's estimate for the number of sports awards that will be earned for these fall sports?

- A. 80
- B. 88
- C. 91
- D. 92
- E. 99

Geometry Reminders for the ACT

Angle Measures

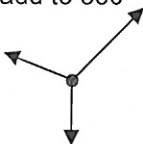
Interior angles of a triangle add to 180°



Angles that form a line add to 180° (are supplementary)



Angles that form around a point add to 360°



Interior angles of a polygon with n sides add to $180(n - 2)$

ex: With 5 sides, you can make 3 (or $5 - 2$) triangles drawing diagonals from any one vertex. Interior angle sum will be $180 \times 3 = 540^\circ$.



Angles Formed by Parallel Lines and a Transversal

If parallel lines are cut by a transversal, then

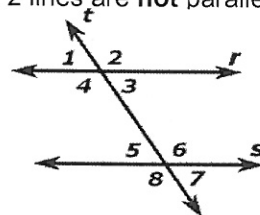
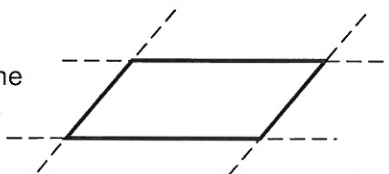
- alternate interior angles \cong
- corresponding angles \cong
- alternate exterior angles \cong
- same side interior angles are supplementary
- same side exterior angles are supplementary



If any of *, then the lines cut by the transversal are parallel.

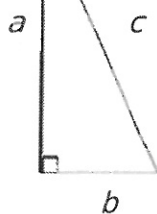
If any of * **not** true, then the 2 lines are **not** parallel.

Extend parallel lines and transversal to help see the relationships in polygons such as a parallelogram.



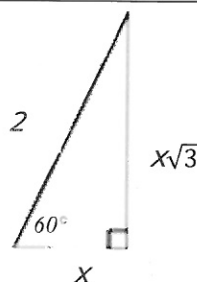
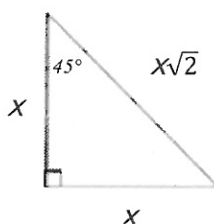
Side Measures of Triangles

If $a^2 + b^2 = c^2$

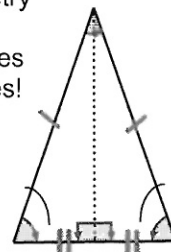


Pythagorean Triples can save you time.

3,4,5 / 6,8,10 / 9,12,15
5,12,13 / 10,24,26
7,24,25
9, 40,41



Use the symmetry of isosceles triangles!

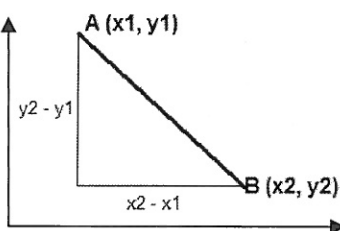


On the Coordinate Plane

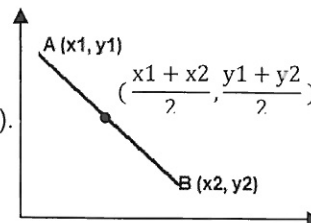
If you forget the distance or midpoint formula, start by plotting the two points you are given (a quick sketch!).

For distance, use the Pythagorean Theorem:

$$AB^2 = (x_2 - x_1)^2 + (y_2 - y_1)^2$$



For midpoint, remember that the x-coordinate of the midpoint is exactly in the middle of the x-coordinates of the endpoints (and the same for y).



The equation of a circle with center (h, k) and radius r is $(x - h)^2 + (y - k)^2 = r^2$.

Similar Triangles and Polygons

If two polygons are similar then all corresponding angles are congruent and all corresponding sides are proportional.

Common and Important Formulas

Circumference of circle = πd

Area of circle = πr^2

Area of a parallelogram = bh

Area of a triangle = $\frac{1}{2}bh$

The height must be perpendicular to the base!

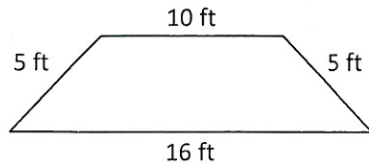
If the height is not given, look for a right triangle and use the Pythagorean Theorem.

Surface area of a 3D figure: find the area of each side and add.

Geometry Practice

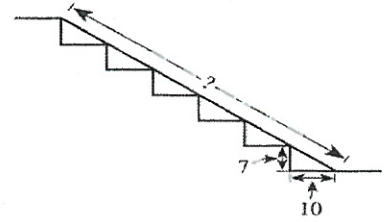
1. The parallel sides of the isosceles trapezoid shown below are 10 feet long and 16 feet long, respectively. What is the distance, in feet, between these 2 sides?

- A. 3
- B. 4
- C. 5
- D. 10
- E. 16



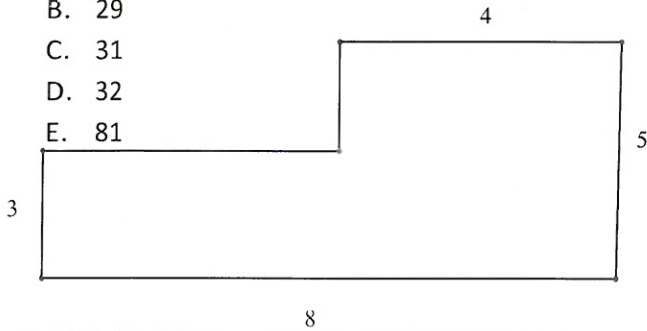
2. A moving company uses a plank on a staircase from the top of a staircase to the floor to allow them to move a heavy desk. As shown in the figure below, each stair is 7 inches high and 10 inches deep. Which of the following is closest to the length, in inches, of the plank?

- A. 42
- B. 48
- C. 73
- D. 102
- E. 252



3. In the figure, all of the line segments are either horizontal or vertical, as shown, and the dimensions are given in centimeters. What is the perimeter, in centimeters, of the figure?

- A. 26
- B. 29
- C. 31
- D. 32
- E. 81



4. Given below are 4 true if-then statements involving pairs of the 5 statements A, B, C, D, and E.

If A is true, then C is true.

If D is true, then E is true.

If A is true, then D is true.

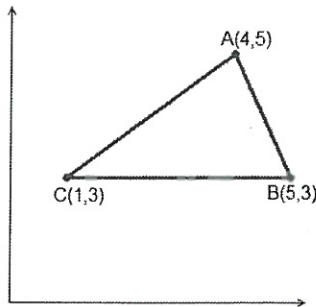
If E is true, then B is true.

If A is true, then which of the following lists gives all the other statements that are necessarily true?

- A. B, C, D, and E
- B. B, D, and E
- C. B and E
- D. C and D
- E. C, D, and E

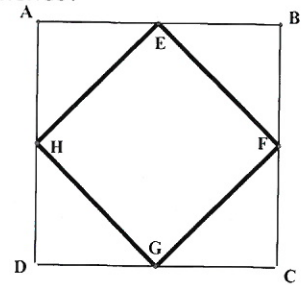
5. In the figure below, the vertices of $\triangle ABC$ have (x, y) coordinates $(4, 5)$, $(5, 3)$, and $(1, 3)$, respectively. What is the area of $\triangle ABC$?

- A. 4
- B. $4\sqrt{2}$
- C. $4\sqrt{3}$
- D. 8
- E. $8\sqrt{2}$



6. In the figure below, ABCD is a square and E, F, G, and H are the midpoints of its sides. If $AB = 12$ inches, what is the perimeter of EFGH, in inches?

- A. 24
- B. $24\sqrt{2}$
- C. $36\sqrt{2}$
- D. $48\sqrt{2}$
- E. 72



7. In the standard (x, y) coordinate plane, point A has coordinates of $(1, 7)$ and point B has coordinates of $(8, 20)$. What are the coordinates of the midpoint of \overline{AB} ?

- A. $(8, 27)$
- B. $(3.5, 6.5)$
- C. $(4, 14)$
- D. $(-6, -6)$
- E. $(4.5, 13.5)$

8. In the standard (x, y) coordinate plane, point M with coordinates $(5, 4)$ is the midpoint of \overline{AB} , and B has coordinates $(7, 3)$. What are the coordinates of A?

- F. $(17, 11)$
- G. $(9, 2)$
- H. $(6, 3.5)$
- J. $(3, 5)$
- K. $(-3, -5)$

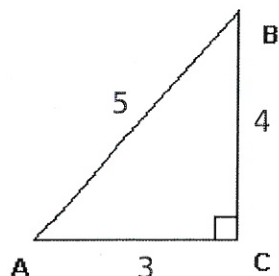
How are problems 7 and 8 different?

Advanced Algebra Trig Reminders for the ACT

Right triangle trig:

$$\text{Sine} = \frac{\text{opposite}}{\text{hypotenuse}} \quad \text{Cosine} = \frac{\text{adjacent}}{\text{hypotenuse}} \quad \text{Tangent} = \frac{\text{opposite}}{\text{adjacent}}$$

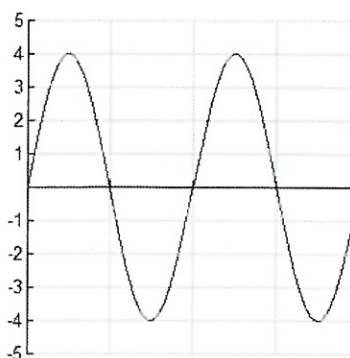
For example:



$$\sin A = \frac{4}{5} \quad \cos A = \frac{3}{5} \quad \tan A =$$

On the coordinate plane:

$$\text{Sine} = \frac{y}{r} \quad \text{Cosine} = \frac{x}{r} \quad \text{Tangent} =$$



A **sinusoid** is a cyclic graph, where the input is the angle measure and the output is the trig ratio (for either sine or cosine).

Amplitude: The distance from the maximum to midline (or the distance from the minimum to midline)

Period: How long it takes to get through one cycle.

****Note:** 360 degrees is equal to 2π radians

Solving formulas in terms of another variable.

For example: Solve $a(b + c) = d$ for b .

Distribute: $ab + ac = d$

Subtract ac from both sides of the equation: $ab = d - ac$

Divide by a : $b = \frac{d-ac}{a}$ which can also be written as $b = \frac{d}{a} - c$

A **matrix** (plural matrices) is a rectangular array of numbers displayed in rows and columns.

For example:

$\begin{bmatrix} 2 & 7 \\ 0 & 3 \\ 4 & 1 \end{bmatrix}$ is a matrix with dimensions 3×2 , because there are three rows and 2 columns.

Function notation

For example: Given $f(x) = 2x + 1$, find $f(3)$.

Then $2(3) + 1$, so it equals 7.

Know how to evaluate expressions involving exponents, roots, absolute value

Solve and graph linear equations, linear inequalities, and systems of linear equations.

Solve quadratic equations using the quadratic formula or factoring

$$\text{Quadratic Formula: } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

A **logarithm** is an exponent.

For example: $\log_2 8$ is equal to 3, because $2^3 = 8$.

Sets of numbers: complex/imaginary, real, irrational, rational, integers, whole

Extended Distributive property/Factoring

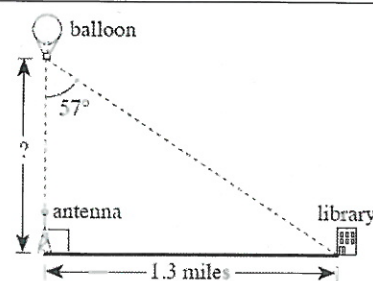
Multiply a binomial times a binomial. For example: Multiply $(x + 3)(x + 5)$. Answer: $x^2 + 8x + 15$

Square a binomial. For example: Multiply $(x + y)^2$. Answer: $x^2 + 2xy + y^2$

Factoring is the inverse of the distributive property. For example: Factor $x^2 + 8x + 15$. Answer: $(x + 3)(x + 5)$.

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| <p>15. What is the sum of the 2 solutions of the equation: $x^2 + 2x - 15 = 0$?</p> <p>A. -15 B. -5 C. -2 D. 0 E. 3</p> | <p>16. For a certain quadratic equation, $ax^2 + bx + c = 0$, the 2 solutions are $x = \frac{3}{5}$ and $x = -\frac{1}{2}$. Which of the following could be factors of $ax^2 + bx + c$?</p> <p>A. $(5x - 3)$ and $(2x + 1)$ B. $(5x - 1)$ and $(2x + 3)$ C. $(5x + 1)$ and $(2x - 3)$ D. $(5x + 3)$ and $(2x - 1)$ E. $(5x + 3)$ and $(2x + 1)$</p> |
| <p>17. Given $f(x) = 4x + 1$ and $g(x) = x^2 - 2$, which of the following is an expression for $f(g(x))$?</p> <p>A. $-x^2 + 4x + 1$ B. $x^2 + 4x - 1$ C. $4x^2 - 7$ D. $4x^2 - 1$ E. $16x^2 + 8x - 1$</p> | <p>18. If $f(x) = x^2 - 2$, then $f(x + h) = ?$</p> <p>A. $x^2 + h^2$ B. $x^2 - 2 + h$ C. $x^2 + h^2 - 2$ D. $x^2 + 2xh + h^2$ E. $x^2 + 2xh + h^2 - 2$</p> |
| <p>19. In the complex numbers, where $i^2 = -1$, $\frac{i}{1+i} \cdot \frac{1-i}{1-i} = ?$</p> <p>A. $i - 1$ B. $1 + i$ C. $1 - i$ D. $\frac{1-i}{2}$ E. $\frac{1+i}{2}$</p> | <p>20. What value of n will satisfy the equation $0.1(n + 1,350) = n$?</p> <p>A. 1,500 B. 1,485 C. 1,215 D. 150 E. 135</p> |
| <p>21.) Which of the following gives all the solutions of $x^2 + 2x = 8$?</p> <p>A. 4 and -2 B. -4 and 2 C. -8 and 1 D. -4 only E. -8 only</p> | <p>22. Which of the following is an irrational number that is a solution to the equation $x^2 - 12 - 4 = 0$?</p> <p>A. 4 B. $\sqrt{2}$ C. $2\sqrt{2}$ D. $4\sqrt{2}$ E. $2\sqrt{3}$</p> |
| <p>23. What is the real value of x in the equation $\log_2 24 - \log_2 3 = \log_5 x$?</p> <p>A. 3 B. 21 C. 72 D. 125 E. 243</p> | <p>24. The value of $\log_5 \left(5^{\frac{13}{2}}\right)$ is between of the following pairs of consecutive integers?</p> <p>A. 0 and 1 B. 4 and 5 C. 5 and 6 D. 6 and 7 E. 9 and 10</p> |
| <p>25. What is the real value of x in the equation: $\log_2 24 - \log_2 3 = \log_5 x$?</p> <p>A. 3 B. 21 C. 72 D. 125 E. 243</p> | |

26. From a hot air balloon, the angle between a radio antenna straight below and the base of the library downtown is 57° as shown below. If the distance between the radio antenna and the library is 1.3 miles, how many miles high is the balloon?



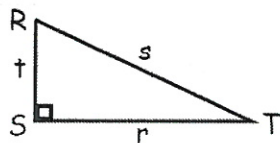
- A. $\frac{1.3}{\sin 57^\circ}$
- B. $\frac{1.3}{\cos 57^\circ}$
- C. $\frac{1.3}{\tan 57^\circ}$
- D. $1.3 \sin 57^\circ$
- E. $1.3 \tan 57^\circ$

27. A 24 foot ladder is leaning against a telephone pole. The angle of elevation to the top of the telephone pole is 37° . What is the height, in feet, of telephone pole?

- A. $24 \tan 37^\circ$
- B. $24 \sin 37^\circ$
- C. $24 \cos 37^\circ$
- D. $24 \sec 37^\circ$
- E. $24 \cot 37^\circ$

28. For right triangle ΔRST shown below, what is $\tan R$?

- A. r/s
- B. r/t
- C. t/r
- D. t/s
- E. s/t

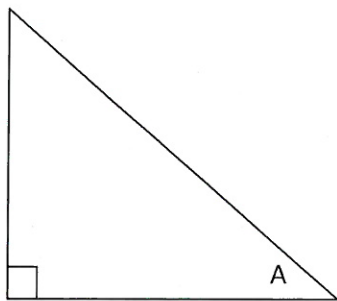


29. Which of the following is equivalent to $\frac{\tan n \csc n}{\sin n \sec n}$?

- (A) 1
- (B) $\sin n$
- (C) $\cos n$
- (D) $\cot n$
- (E) $\csc n$

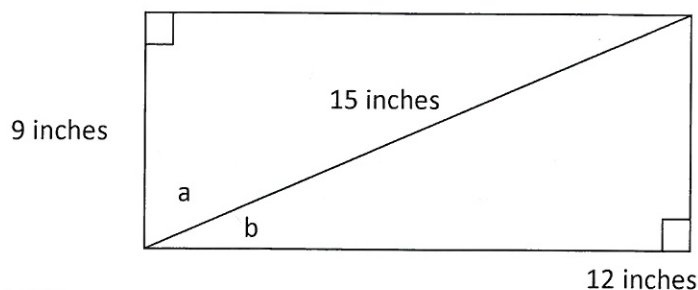
30. If $\tan A = \frac{x}{y}$, $x > 0$, $y > 0$, and $0 < A < 90^\circ$, what is $\sin A$?

- A. $\frac{x}{y}$
- B. $\frac{y}{x}$
- C. $\frac{x}{\sqrt{x^2 + y^2}}$
- D. $\frac{y}{\sqrt{x^2 + y^2}}$
- E. $\frac{\sqrt{x^2 + y^2}}{x}$



31. The 2 triangles in the rectangle below share a common side. What is $\sin(a - b)$?

(Note: $\sin(a - b) = \sin a \cos b - \cos a \sin b$ for all a and b)



- A. $7/25$
- B. $1/2$
- C. $3/5$
- D. 1
- E. $25/9$

10

Hmmmm.....

| | |
|---|--|
| <p>32. The quantity $\sqrt[n]{2^p}$ is defined when n is an integer greater than 2 and p is any nonzero real number. Which of the following is a relationship between n and p that will always make $\sqrt[n]{2^p}$ a positive integer?</p> <p>A. $\frac{p}{n}$ is a positive integer</p> <p>B. $\frac{n}{p}$ is a positive integer</p> <p>C. p is greater than n</p> <p>D. n is greater than p</p> <p>E. The sum of p and n is one</p> | <p>33. Which of the following statements <i>must</i> be true whenever n, a, b, and c are positive integers such that $n < a$, $c > a$, and $b > c$?</p> <p>A. $a < n$</p> <p>B. $b - n > a - n$</p> <p>C. $b < n$</p> <p>D. $n + b = a + c$</p> <p>E. $2n > a + b$</p> |
| <p>34. Which of the following is the set of all real numbers x such that $x + 3 > x + 5$?</p> <p>A. The empty set</p> <p>B. The set containing all real numbers</p> <p>C. The set containing all negative real numbers</p> <p>D. The set containing all nonnegative real numbers</p> <p>E. The set containing only zero</p> | <p>35. How many irrational numbers are there between 1 and 6?</p> <p>F. 1</p> <p>G. 3</p> <p>H. 4</p> <p>J. 10</p> <p>K. Infinitely many</p> |
| <p>36. If $6a^4b^3 < 0$, then which of the following CANNOT be true?</p> <p>A. $b < 0$</p> <p>B. $b > 0$</p> <p>C. $a = b$</p> <p>D. $a < 0$</p> <p>E. $a > 0$</p> | <p>37. Each of the variables t, w, x, y, and z represents a different <i>positive</i> real number. Given the equations below, which of the 4 variables w, x, y, and z necessarily has the greatest value?</p> <p>$1.23w = t$</p> <p>$1.01x = t$</p> <p>$0.99y = t$</p> <p>$0.23z = t$</p> <p>F. w</p> <p>G. x</p> <p>H. y</p> <p>J. z</p> <p>K. Cannot be determined from the given information</p> |

And one more matrix problem!

In the 2×2 matrix below, b_1 and b_2 are the costs per pound of bok choy (Chinese greens) at Market 1 and Market 2, respectively; r_1 and r_2 are the costs per pound of rice flour at these 2 markets, respectively. In the following matrix product, what does q represent?

$$\begin{bmatrix} 0.5 & 0.5 \end{bmatrix} \cdot \begin{bmatrix} b_1 & r_1 \\ b_2 & r_2 \end{bmatrix} = \begin{bmatrix} p & q \end{bmatrix}$$

- F. The cost of r_1 pounds of rice flour at \$0.50 per pound
- G. The cost of a half-pound of rice flour at Market 1
- H. The total cost of a half-pound of bok choy and a half-pound of rice flour at Market 1
- J. The total cost of a half-pound of bok choy and a half-pound of rice flour at Market 2
- K. The total cost of a half-pound of rice flour at Market 1 and a half-pound of rice flour at Market 2