ACT Math Vocabulary

Integer …-2, -1, 0, 1, 2, …

Rational: numbers that can be written as fractions (includes repeating and terminating decimals)

Irrational: numbers that can't be written as fractions (e, π, $\sqrt{2}$)

Real numbers: not imaginary

Prime: a number that is only divisible by 1 and itself (3, 5, 7)

Factors: numbers that divide into a larger number (factors of 12 are 1, 2, 3, 4, 6, 12)

Multiples: all numbers that have the same factor (multiples of 3 are 3, 6, 9, 12, 15, etc)

Divisor: the thing that you are dividing by

Numerator: the top of a fraction

Denominator: the bottom of a fraction

Mixed fraction to improper: Mixed 2 ½ verses improper 5/2

Mean: the average of a set of numbers, add them all together and divide by the total

Median: the number in the middle when placed in order (if there are two then average them)

Product: the answer to a multiplication problem

Sum: the answer to an addition problem

Less than: can mean subtract or <

"a number is four less than 12": x = 12 – 4

Coefficient: the number in front of a variable $3x^2$ (3 is the coefficient)

Variable: x or whatever letter they are choosing

Perimeter: the sum of all of the sides of a figure

Area: the amount of space inside a figure

Difference: subtract

Terms: the following has 3 terms: $3x^2 + 5x – 7$

Consecutive: one after another

Sequence: a pattern of numbers (2, 4, 6, 8, …)

Add/Mult. Fractions

Add: you need a common denominator

Mult: multiply numerators & denominators together.

ACT Prep Course Math Formula Sheet

MUST KNOW FORMULAS

Interest = Principal x Rate x Time $I = P \cdot R \cdot T$

Distance = Rate x Time $D = R \cdot T$

CIRCLES

Diameter = 2 x Radius $D = 2r$

Circumference = π x Diameter $C = 2\pi r$

Area = π x Radius^2 $A = \pi r^2$

$$\frac{\text{Arc Length}}{\text{Circumference}} = \frac{\text{Arc Measure}^\circ}{360^\circ}$$

SQUARES

Perimeter = 4 x Side $P = 4s$

Area = Side^2 $A = s^2$

RECTANGLES

Perimeter = 2 x Width + 2 x Length $P = 2w + 2l$

Area = Width x Length $A = w \cdot l$

TRIANGLES

Area = ½ Base x Height $A = bh/2$

Sum of interior angles = 180°

Equilateral: All sides equal measure

Isosceles: 2 sides and 2 angles congruent

RIGHT TRIANGLES (one interior angle = 90°)

Pythagorean Theorem:

Square of hypotenuse is equal to the sum of the squares of the other two sides.

$a^2 + b^2 = c^2$ or $c = \sqrt{a^2 + b^2}$

Common Right Triangles Side Ratios:

3, 4, 5	5, 12, 13
∠45° ∠45° ∠90°:	1, 1, $\sqrt{2}$
∠30° ∠60° ∠90°:	1, $\sqrt{3}$, 2

OTHER GEOMETRY

Parallelogram Area $A = b \cdot h$

Trapezoid Area: $A = \frac{b_1 + b_2}{2} \cdot h$

Sum of interior ∠ of n sided polygon = $(n\text{-}2) \cdot 180^\circ$

3D GEOMETRY

Box Volume $V = w \cdot l \cdot h$

Cylinder Volume $V = \pi r^2 h$

Sphere Volume $V = \frac{4}{3}\pi r^3$

Box Surface Area $A = 2(wl + lh + wh)$

Cylinder Surface Area $A = 2\pi r^2 + 2\pi rh$

EXPONENTS & RADICALS

$a^m a^n = a^{m+n}$

$\frac{a^m}{a^n} = a^{m-n}$

$a^{-n} = \frac{1}{a^n}$

$(a^m)^n = a^{mn}$

$(ab)^m = a^m b^m$

$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$

$a^0 = 1$

$\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$

$\frac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\frac{a}{b}}$

$\sqrt[n]{a^m} = \left(\sqrt[n]{a}\right)^m$

$\sqrt[m]{\sqrt[n]{a}} = \sqrt[mn]{a}$

$\left(\sqrt[n]{a}\right)^n = a$

COORDINATE FORMULAS

Distance between two points P_1 and P_2 :

$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

Slope = Rise / Run :

$m = \frac{y_1 - y_2}{x_1 - x_2}$

Slope-Intercept Line Equation:

$y = mx + b$, m = slope, b = y-intercept

Circle Equation:

$(x-a)^2 + (y-b)^2 = r^2$, (a,b)=center, r=radius

QUADRATIC FORMULA

For quadradic equation $ax^2 + bx + c = 0$

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

TRIGONOMETRIC FORMULAS

$\text{sine} = \frac{\text{opposite}}{\text{hypotenuse}}$ $\quad \text{cosecant} = \frac{1}{\text{sine}}$

$\text{cosine} = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\quad \text{secant} = \frac{1}{\text{cosine}}$

$\text{tangent} = \frac{\text{opposite}}{\text{adjacent}}$ $\quad \text{cotangent} = \frac{1}{\text{tangent}}$

Pythagorean Identity: $\sin^2\Theta + \cos^2\Theta = 1$

Quadrants:

II	I
sin + cos - tan -	sin + cos + tan +
III	**IV**
sin - cos - tan +	sin - cos + tan -

DEGREES TO RADIANS

$360^\circ = 2\pi$ $\quad 90^\circ = \pi / 2$

ACT Test Prep and Practice Web Sites

1. www.march2success.com/index.cfm
   This site is excellent! It has several practice tests and gives you a score when you finish. It also times the test for you and has tutorials. Everything is free.

2. www.petersons.com
   Go to "Quick Test Prep Search" to find some free information and some materials that cost money.

3. www.kaptest.com/act
   A variety of test prep but it is not free, it costs but includes classes not just materials for around $75 to $100.

4. http://tutoring.sylvanlearning.com/test-preparation/SAT.cfm
   This site offers Sylvan's class, but also gives some quick tips.

5. www.actstudent.org/testprep/
   This site is produced by the ACT and includes some free and some pay materials to help prepare for the test.

6. www.testprepreview.com
   This site has many free testing materials for the ACT.

7. http://continue.utah.edu/youth/index.php
   This site gives you information on the course offered by the University of Utah. The course costs $185 and is offered in many locations including Bountiful.

8. www.act.org/path/secondary/solution.html
   This is a site for educators to help students.

9. www.number2.com
   This is one of the most popular test sites on the web and it is free practice for students.

10. www.powerprep.com/
    This site includes software and online courses that can help students prepare for both the SAT and the ACT. Some software is free and some cost $.

11. www.barronstestprep.com/
    This is a pay site for "Barrons" test prep materials, includes software, online classes and much more.

12. www.mo-media.com/act/
    This site provides helps to study and tips for increasing your score on the ACT test.

13. www.utahmentor.org
    This is a great site and a personal favorite.