ACT math formula sheet

The ACT doesn't give you a formula sheet. Print this page, cover it, and write out each section from memory before you check it.

Lines and coordinates

- Slope: m = (y y)/(x x)
- Slope-intercept form: y = mx + b
- Point-slope form: y y = m(x x)
- Parallel lines: equal slopes. Perpendicular lines: slopes multiply to 1.
- Distance: d = [(x x)² + (y y)²]
- Midpoint: ((x + x)/2, (y + y)/2)

Algebra

- Quadratic formula: x = [b ± (b² 4ac)]/2a
- Discriminant b² 4ac: positive gives 2 real solutions, zero gives 1, negative gives none
- Vertex: x = b/2a. Vertex form y = a(x h)² + k has vertex (h, k)
- Difference of squares: a² b² = (a + b)(a b)
- Exponents: x × x = x, (x) = x, x = 1, x = 1/x
- Percent change = (new old)/old × 100

Triangles

- Pythagorean theorem: a² + b² = c²
- Triples: 3, 4, 5 and 5, 12, 13 and 8, 15, 17 (and multiples)
- 45°-45°-90°: x, x, x2
- 30°-60°-90°: x, x3, 2x
- Triangle angles add to 180°. Polygon interior angles add to (n 2) × 180°.

Area and volume

Shape	Formula
Rectangle area	A = lw
Triangle area	A = ½bh
Parallelogram area	A = bh
Trapezoid area	A = ½(b+ b)h
Box volume	V = lwh
Cylinder volume	V = r²h
Cone volume	V = r²h

Shape	Formula
Sphere volume	$V = (4/3)r^3$
Pyramid volume	V = × base area × h

Circles

- Area: $A = r^2$. Circumference: $C = 2r = d$
- Arc length = (angle/360°) × 2r. Sector area = (angle/360°) × r^2
- 180° = radians
- Circle equation: $(x\ \ h)^2\ + (y\ \ k)^2\ = r^2$, center (h, k)

Trigonometry

- SOH-CAH-TOA: sin = opposite/hypotenuse, cos = adjacent/hypotenuse, tan = opposite/adjacent
- tan = sin /cos and $\sin^2\ + \cos^2\ = 1$
- csc = 1/sin , sec = 1/cos , cot = 1/tan
- sin 30° = 1/2, sin 45° = 2/2, sin 60° = 3/2
- Law of sines: a/sin A = b/sin B = c/sin C. Law of cosines: $c^2\ = a^2\ + b^2\ \ 2ab \cos C$

Statistics and probability

- Mean = sum/number of values, so sum = mean × number of values
- Median: middle value in order. Range = largest smallest
- Probability = favorable outcomes/total outcomes. P(not A) = 1 P(A)
- Independent events: P(A and B) = P(A) × P(B)

Enhanced ACT math: 45 questions, 50 minutes, 4 answer choices each. Check your calculator is in degree mode for degree questions.