مثلة السداسي ←

$(6-2)\times 180 = 720$

* صيغة مجموع الزوايا ←

$(n-2)\times 180$

KAPLAN TEST PREP

GRE® FORMULA SHEET

عدد الأضلاع

Use this sheet to help you remember your math content. Be sure also to make use of the Kaplan Methods and Strategies on the reverse side.

Triangles:

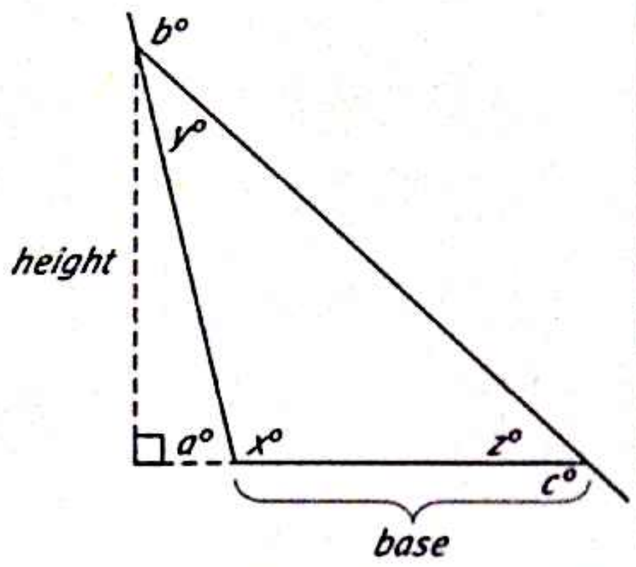
$x + y + z = 180°$ (Interior angles)

$a + b + c = 360°$ (Exterior angles)

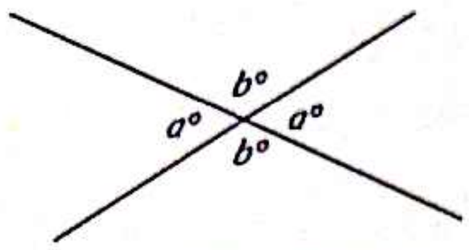
$a = y + z$; $b = x + z$; $c = x + y$

Area = $\frac{1}{2}$ *base* × *height*

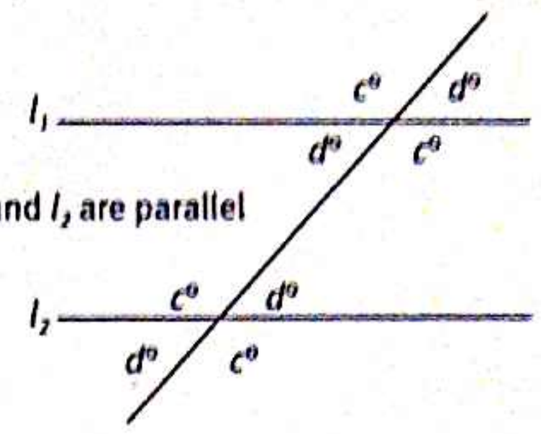
Sum of any 2 sides > 3rd side

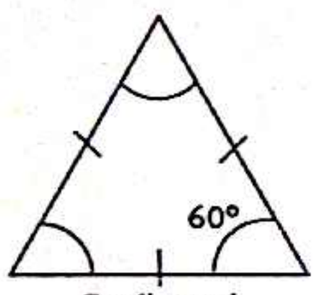


Angles:

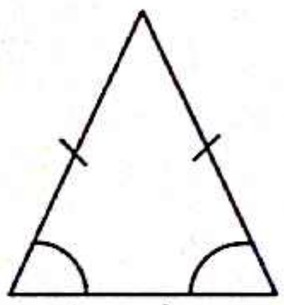


$a + b = 180$



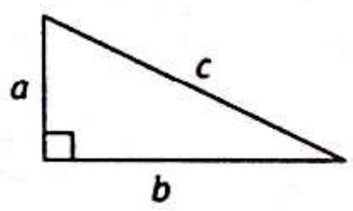


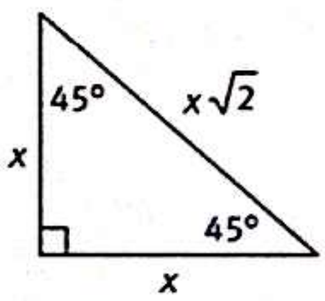
Equilateral

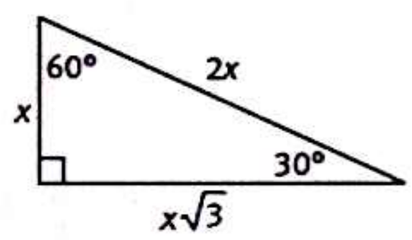


Isosceles

Right Triangles:





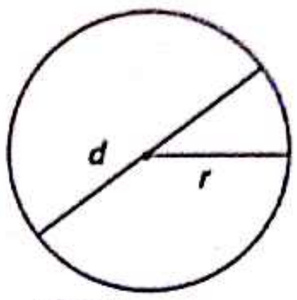


Side Ratios
(Pythagorean Triples)

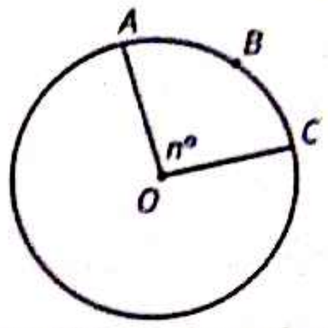
3:4:5
5:12:13
7:24:25
8:15:17
9:40:41

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

Circles:



$d = 2r$
$C = 2\pi r$ or πd
$A = \pi r^2$
360° around



$\frac{n}{360} = \frac{\text{Arc } ABC}{\text{Circum.}} = \frac{\text{Area of sector } OABC}{\text{Area of circle } O}$

Classic Quadratics:

$x^2 - y^2 = (x + y)(x - y)$

$x^2 + 2xy + y^2 = (x + y)(x + y)$

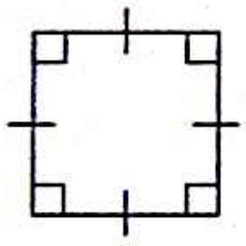
$x^2 - 2xy + y^2 = (x - y)(x - y)$

FOIL:

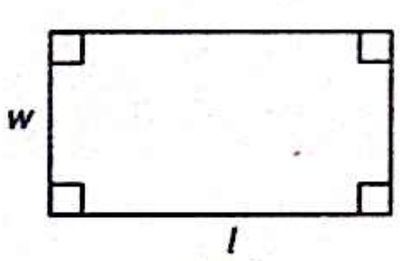
First, Outer, Inner, Last

$(a + b)(c + d) = ac + ad + bc + bd$

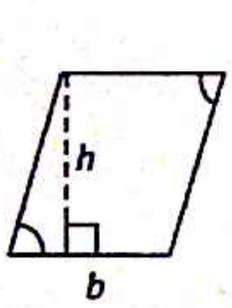
Quadrilaterals: Sum of interior angles = 360°



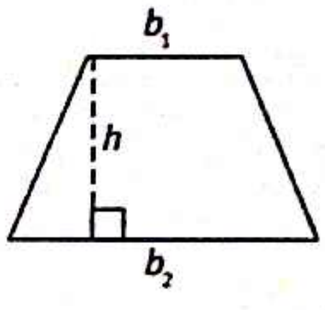
$A = s^2$



$A = lw$

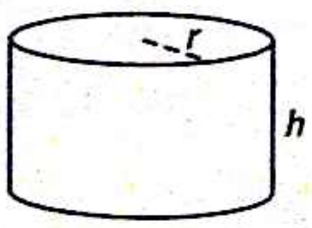


$A = bh$

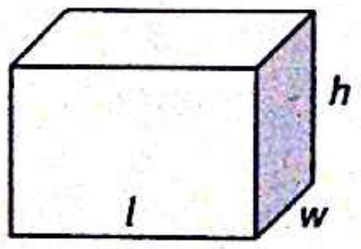


$A = \frac{1}{2}(b_1 + b_2)h$

Uniform Solids:



$V = \pi r^2 h$
$SA = 2\pi r^2 + 2\pi rh$



$V = lwh$
$SA = 2(lw + lh + wh)$

Other Formulas and Things to Know:

Speed = $\frac{\text{Distance}}{\text{Time}}$ Average = $\frac{\text{Sum of the terms}}{\text{Number of terms}}$ Average Speed = $\frac{\text{Total Distance}}{\text{Total Time}}$ Rate = $\frac{\text{Quantity of } A}{\text{Quantity of } B}$

% Increase = $\frac{\text{New Amount} - \text{Original Amount}}{\text{Original Amount}} \times 100\%$ % Decrease = $\frac{\text{Original Amount} - \text{New Amount}}{\text{Original Amount}} \times 100\%$

Order of Operations:

PEMDAS—Parentheses, Exponents, Multiplication and Division, Addition and Subtraction

Combinations and Permutations:

عدد طرق الترتيب مع الاهمال

$_nC_k = \frac{n!}{k!(n-k)!}$

عدد طرق الترتيب مع الاهتمام

$_nP_k = \frac{n!}{(n-k)!}$

Exponent Rules:

$x \cdot x = x^2$ $(x^a)^b = x^{ab}$

$x^{-a} = \frac{1}{x^a}$ $\frac{x^a}{x^b} = x^{a-b}$

$x^0 = 1$ $(\text{negative})^{\text{odd}} = \text{negative}$

$x^a x^b = x^{a+b}$ $(\text{negative})^{\text{even}} = \text{positive}$

Radical Rules:

$\sqrt{a}\sqrt{b} = \sqrt{ab}$

$\frac{\sqrt{a}}{\sqrt{b}} = \sqrt{\frac{a}{b}}$

$a\sqrt{c} + b\sqrt{c} = (a + b)\sqrt{c}$

$\sqrt{a} + \sqrt{b} \neq \sqrt{a + b}$

$(\sqrt{a})^2 = a$

Numbers:

0 is an even integer.
1 is *not* prime.
2 is the lowest prime number and the only even prime number.
Mode: the most common number(s) in a set
Median: the middle term in a set of ascending or descending numbers; when the set has an even number of numbers, the median is the average of the two middle terms
Only (odd) × (odd) and (odd) + (even) yield odd numbers.

Miscellaneous:

$ab + ac = a(b + c)$ $\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c}$

$x\%$ of $y = y\%$ of x $|-x| = |x|$

Work Formula:

$T = \frac{ab}{a + b}$

Coordinate Plane: In the *xy*-plane, the *y*-axis is vertical, and the *x*-axis is horizontal.

Standard form of a line: $y = mx + b$
(where m is the slope, and b is the *y*-intercept)

Slope = $\frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$

GRE QUANTITATIVE STRATEGY SHEET

The Kaplan Method for Quantitative Comparison

STEP 1 Analyze the centered information and quantities.
STEP 2 Approach strategically.
Use one or more of the following approaches:

- Compare, don't calculate.
- Make the quantities look alike.
- Compare piece by piece.
- Do the same thing to both quantities.
- Use Picking Numbers.

The Kaplan Method for Problem Solving

STEP 1 Analyze the question.

Look at what the question is asking, the information given, and the area of math tested. Use the format of the answer choices (variables, numbers, expressions, fractions, etc.) to assess how to approach the question.

STEP 2 Identify the task.

Determine what the question asks — ask yourself, "What does the correct answer represent?"

STEP 3 Approach strategically.

Ask yourself, "How can I use the format of the question and the information it gives me to my advantage?" Use one or more of the following approaches:

- Use a strategy (Picking Numbers or Backsolving).
- Do the straightforward math.
- Guess strategically.

STEP 4 Confirm your answer.

Ask yourself, "Did I answer the question asked?"

The Kaplan Method for Data Interpretation

STEP 1 Analyze the tables and graphs.

- Pay attention to any titles, scales, notes, and keys.

STEP 2 Approach strategically.

- Determine which chart(s) or graph(s) is/are relevant to the question.
- Estimate where possible.
- Make sure you answered the question asked.

Quantitative Comparison Answer Choices

The answer choices on QCs never change, so memorize them to save valuable time on Test Day.

(A) Quantity A is greater.
(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

Picking Numbers

When Picking Numbers, be sure that the numbers are permissible and manageable:

- **Permissible** numbers follow the rules of the problem.
- **Manageable** numbers are those that are easy to work with in the problem—usually small, whole numbers.

When to Pick Numbers

Variables in the Question Stem

- Most people find it easier to perform calculations with numbers than to perform calculations with variables.
- Variables may be letters (n, x, t, etc.) or unspecified values (e.g., "a factory produces some number of units of a product each month").

Percents in the Answer Choices

- Since percent means "out of one hundred," pick 100 for the unknown value.

Variables in the Answer Choices

- After Picking Numbers, reread the question stem, substituting your number(s) for the variable(s).
- When Picking Numbers with variables in the answer choices, you always need to check each answer choice.

Must Be/Could Be/Cannot Be

- On these questions, you can pick numbers and plug them into every answer choice . . .
- . . . or you can pick different numbers for each answer, trying either to eliminate it or to confirm it.

Backsolving

- Like Picking Numbers, Backsolving allows you to plug numbers into the problem. In this case, the numbers are those in the answer choices.
- Plug in a value from an answer choice and solve the problem arithmetically. If your calculations are consistent with the question stem, then the answer is correct.
- The most efficient way to Backsolve is to plug in either (B) or (D) first. If you need a smaller or larger value to plug into the question, try another answer choice. Backsolving allows you to test, at most, two answer choices to find the correct answer to a standard multiple-choice question.
- For questions that have one or more correct answer, it is possible to use Backsolving if you're not sure how to set up the problem algebraically. Just know that for All-That-Apply questions, you must check *all* answer choices to determine which are correct.

"Which of the following" Questions

On "which of the following" questions with one correct answer, the answer is weighted disproportionately to be either (D) or (E). Work from the bottom up on these questions.

GRE Quantitative Pacing Chart

	Quantitative Comparison	Problem Solving	Data Interpretation
Number of Questions	approximately 7–8	approximately 9–10	approximately 3
Time per Question	1.5 minutes	1.5–2 minutes	2 minutes