**Algebra**

Algebra is a branch of mathematics dealing with symbols and the rules for manipulating those symbols. For example, to solve for xxx in the equation 2x+3=112x + 3 = 112x+3=11.

Geometry is the study of shapes, sizes, and properties of space. Key formulas include the area of a rectangle A=l×wA = l \times wA=l×w, the area of a triangle A=12×b×hA = \frac{1}{2} \times b \times hA=21​×b×h, and the circumference of a circle C=2πrC = 2\pi rC=2πr.

Statistics is the science of collecting, analyzing, interpreting, and presenting data. Key terms are mean (the average of a set of numbers), median (the middle value in a data set), and mode (the most frequently occurring value in a data set).

Probability is the measure of the likelihood that an event will occur. The key formula is P(E)=Number of favorable outcomesTotal number of outcomesP(E) = \frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}}P(E)=Total number of outcomesNumber of favorable outcomes​.

For area and perimeter, the formulas include: Square: Area A=s2A = s^2A=s2 and Perimeter P=4sP = 4sP=4s; Rectangle: Area A=l×wA = l \times wA=l×w and Perimeter P=2(l+w)P = 2(l + w)P=2(l+w).

For volume, Cube: Volume V=s3V = s^3V=s3; Cylinder: Volume V=πr2hV = \pi r^2 hV=πr2h.

An algebra example: Solve for xxx: 2x+3=112x + 3 = 112x+3=11 leads to 2x=82x = 82x=8 and x=4x = 4x=4.

A geometry example: Find the area of a triangle with a base of 5 cm and a height of 10 cm: A=12×5×10=25 cm2A = \frac{1}{2} \times 5 \times 10 = 25 \text{ cm}^2A=21​×5×10=25 cm2.

A statistics example: Given the data set: 3, 7, 7, 2, 5, the mean is calculated as Mean=3+7+7+2+55=245=4.8\text{Mean} = \frac{3 + 7 + 7 + 2 + 5}{5} = \frac{24}{5} = 4.8Mean=53+7+7+2+5​=524​=4.8.

A probability example: The probability of rolling a 3 on a standard six-sided die is P(3)=16P(3) = \frac{1}{6}P(3)=61​.