Grade 7 Math Cheat Sheet

Ratios and unit rates

Unit rate	**rate = amount / quantity**
Example	**$12 ÷ 3 kg = $4 per kg**
Proportional relation	**y = kx**

Name the units and keep the ratios in the same order. k is the rate per one unit of x.

Is the relationship proportional?

Points (2, 6) and (5, 15)	**6/2 = 15/5 = 3**
If proportional	**y = 3x**
Test (3, 8)	**8/3 ≠ 3**

A proportional graph is a straight line through the origin.

Operate with signed fractions

Add	**−3/4 + 1/2 = −1/4**
Multiply	**(−2/3) × (3/4) = −1/2**
Divide	**(−1/2) ÷ (−1/4) = 2**

For multiplication and division, like signs give a positive result.

Find the new amount

25% off $40	**40 × 0.75 = $30**
25% more than $40	**40 × 1.25 = $50**

Apply the percent change to the original amount.

Solve a two-step equation

Start	**3(x − 2) = 15**
Divide both sides by 3	**x − 2 = 5**
Add 2 to both sides	**x = 7**

Check: 3(7 − 2) = 15.

Basic probability

Equally likely outcomes	**P(A) = favorable / total**
Complement	**P(not A) = 1 − P(A)**
Example: fair die	**P(even) = 3/6 = ½**

The favorable count comes from the group named in the question.

Read a scale drawing

Scale	**1 cm represents 4 m**
Drawing length	**3.5 cm**
Actual length	**3.5 × 4 = 14 m**

A scale factor applies to lengths. Square it for areas in the same units.

Circles

Circumference	**$C = 2\pi r = \pi d$**
Area	**$A = \pi r^2$**

The radius r runs from center to edge. Diameter d = 2r. Circumference uses length units; area uses square units.

