

Straight-Line Rules - Notes and Steps



Key idea

A rule like $y = mx + c$ models a real situation.

m (gradient) is the **rate of change** — added each step.

c (intercept) is the **starting amount**.

To use a rule

Put the given value in for the letter, then work out the answer.

Example

$C = 4t + 8$, find the cost at $t = 5$:

$$C = 4(5) + 8 = 28.$$

Start 8, then 4 more each hour.

Common mistake

Do not swap the start and the rate.

In $C = 6k + 12$ the fixed charge is 12, and 6 is added each step.



Comparing Two Rules



Key idea

To compare two rules, put the **same input** into both, then compare the outputs.

Where they meet

If two graphs cross, that input makes both give the **same** answer — the two options cost the same there.

Example

Plan A $C = 5p + 4$, Plan B $C = 3p + 12$.

At $p = 2$: $A = 14$, $B = 18$, so A is cheaper.

Common mistake

Use the same input in both rules.

Comparing A at $p = 2$ with B at $p = 5$ tells you nothing.



Decreasing Graphs



Key idea

A **negative** gradient means the amount **falls** each step.

In $y = c - mx$, start at c , then subtract.

Example

Battery $B = 92 - 8t$, at $t = 4$:

$B = 92 - 8(4) = 60$, dropping 8 each hour.

Common mistake

Still start from the intercept, then subtract.

$92 - 8(4)$ is $92 - 32 = 60$, not $84 - 8$.



= copy this into your book. Boxes without a pencil are just to read.