

Per What?

A slope is a *rate*. A zero is an *x-value* — and it may or may not mean anything.

THE TWO NUMBERS ARE NOT THE SAME KIND OF THING

$$y = 12x + 30$$

A RATE

12

pesos per kilometre

AN AMOUNT

30

pesos — not per anything

A rate needs **two** units joined by *per*. An amount needs one.

ZERO OR Y-INTERCEPT? TWO DIFFERENT QUESTIONS

THE ZERO

$$y = 0$$

solve for x — an x -value

THE Y-INTERCEPT

$$x = 0$$

read off y — the amount above

For $y = 2x - 6$ the zero is 3 and the y -intercept is -6 . Giving the same number twice is the commonest slip on the paper.

DOES THE ZERO MEAN ANYTHING?

$$y = 12x + 30 \rightarrow -2.5$$

nothing — you cannot travel
minus 2.5 kilometres

$$y = 200 - 25x \rightarrow 8$$

the drum is empty
after 8 minutes

$$y = 80x \rightarrow 0$$

no hours worked,
no pay

Same mathematics, same steps. Only you can tell which is which, because only you know what x stands for. A zero of 0 is not automatically meaningless either — judge every case on its own.

THREE PLACES A SLOPE HIDES

GIVEN	WHAT TO DO	EXAMPLE
A graph	rise $\div$ run, between two exact grid points	up 6, across 2 $\rightarrow$ 3
An equation	the number multiplying x — once it is in $y =$ form	$3y = 9x + 6 \rightarrow 3$
A table	change in $y \div$ change in x	Δy 6, Δx 2 $\rightarrow$ 3

Three routes, one number. If the three do not agree, one of them was read wrong — that is a free check, and it costs a few seconds.

THE TABLE TRAP — WHERE MARKS GO

x	0	4	8	12
y	50	38	26	14

y falls 12 for every 4 of x .

Slope = $-12 \div 4 = -3$, ~~not -12~~

x almost never goes up by one in an examination table. Divide by Δx every time, even when Δx is 1.

YOU ARE ALLOWED TO SAY THIS

“The zero is -2.5 , and it means nothing here.”

That is a complete answer, not giving up. The number is correct and the situation is impossible.

NOT THIS ~~“It means you go backwards 2.5 km.”~~

THIS “ -2.5 , and it means nothing here.”

Inventing a meaning for an impossible answer is the real mistake.