

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Learning Goal 4.2</b>	I can graph and describe linear relations.
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**Example** I was out one night and needed to take a cab home. The company I called charges a flat fee of \$4.50 and then \$2.50 per kilometre.

The equation we found yesterday that relates my cab fare to the number of kilometres travelled is

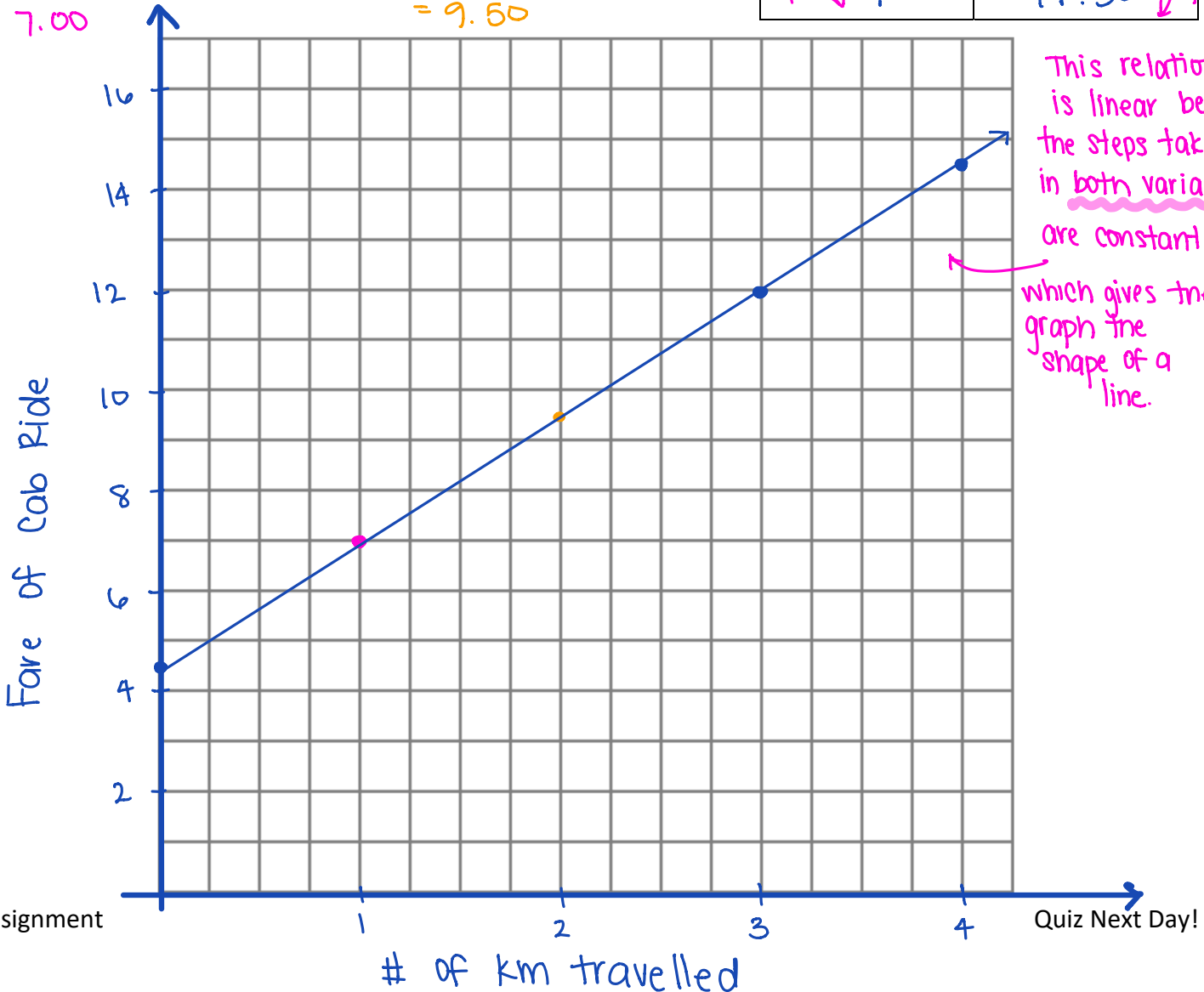
$$f = 4.50 + 2.50k$$

where  $f$  = the total fare of the ride  
 $k$  = the number of km travelled.

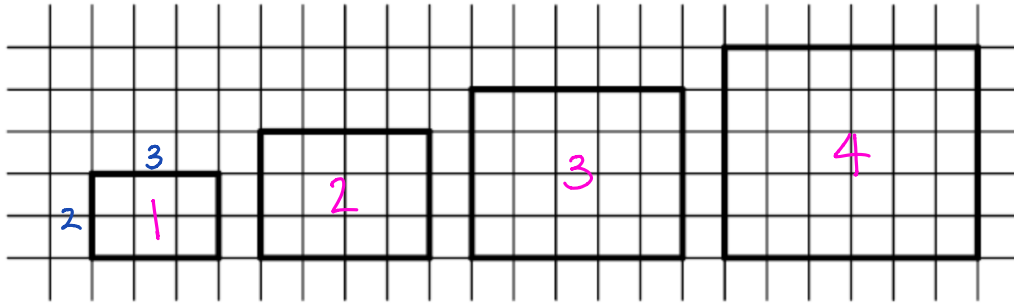
$$\begin{aligned} f &= 4.50 + 2.50(1) \\ &= 4.50 + 2.50 \\ &= 7.00 \end{aligned}$$

$$\begin{aligned} f &= 4.50 + 2.50(2) \\ &= 4.50 + 5.00 \\ &= 9.50 \end{aligned}$$

Distance ( $k$ kilometres)	Fare ( $f$ dollars)
0	4.50
+1 → 1	7.00
+1 → 2	9.50
+1 → 3	12.00
+1 → 4	14.50



**Example** Consider the following set of increasing rectangles.



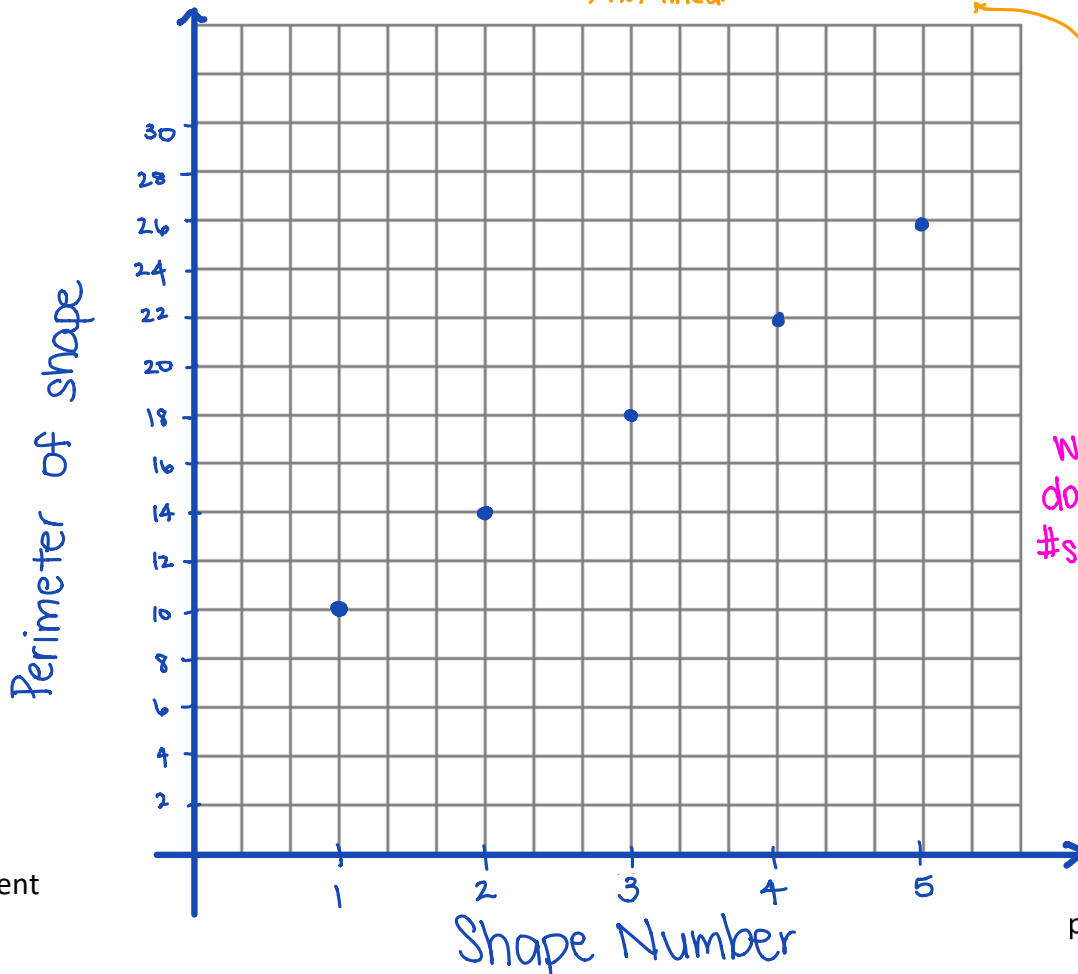
Recall the following formulae

Area of a rectangle	Perimeter of a rectangle
$A = l \times w$	$P = 2l + 2w$

Rectangle Number	Rectangle Area	Rectangle Number	Rectangle Perimeter
1	$2 \times 3 = 6$	1	10
2	$3 \times 4 = 12$	2	14
3	$4 \times 5 = 20$	3	18
4	$5 \times 6 = 30$	4	22

$+1$  }  $+6$  } pattern but not the same value  $\Rightarrow$  not linear  
 $+1$  }  $+8$  }  
 $+1$  }  $+10$  }

$= 2(2) + 2(3)$   
 $= 2(3) + 2(4)$   
 $= 2(4) + 2(5)$   
 $= 2(5) + 2(6)$



same step size every step  $\Rightarrow$  linear relation

We don't connect the dots because the shape #s are whole #s - there is no Shape 2.5