

UNIT 13 *Graphs*

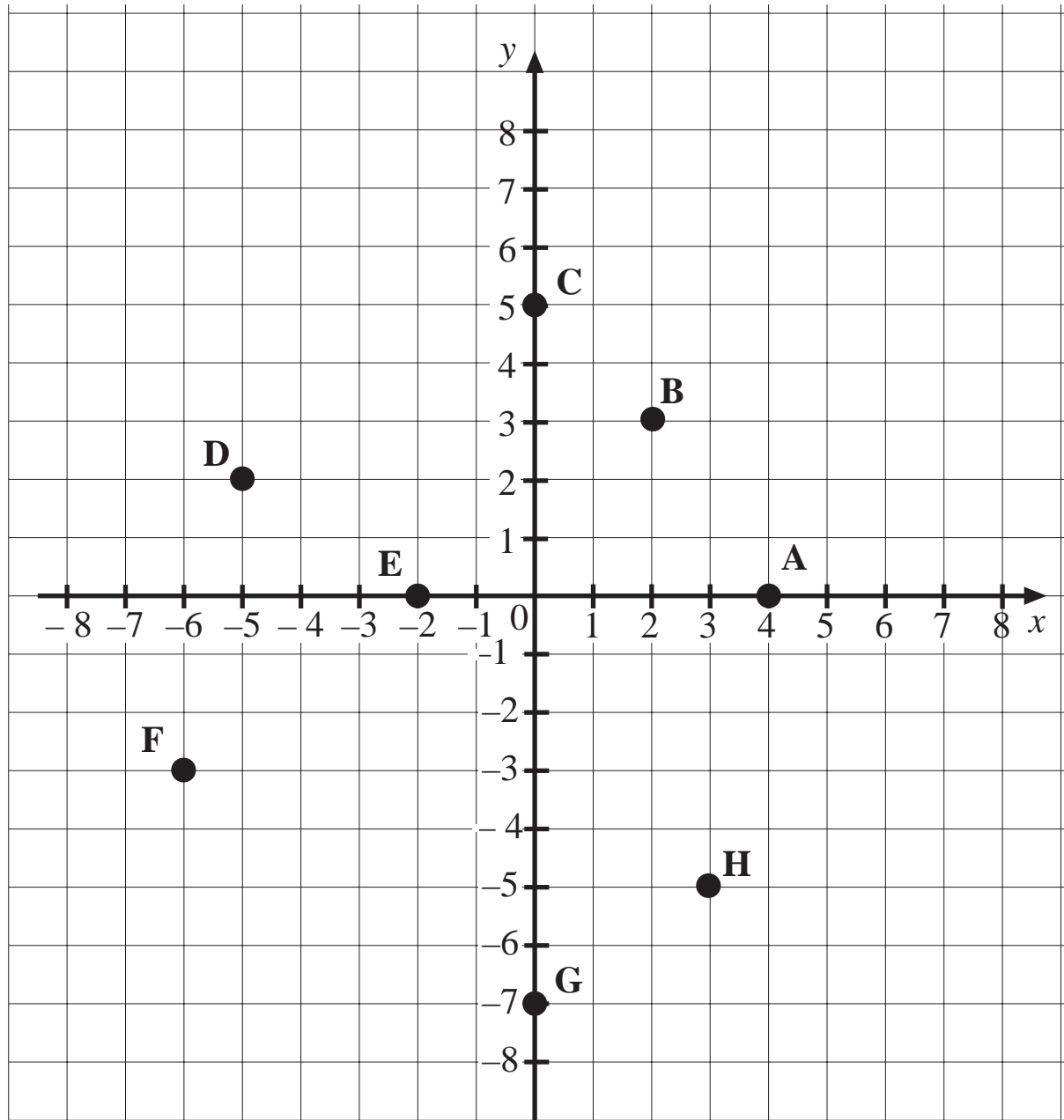
Overhead Slides

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- 13.1 Coordinates
- 13.2 Gradients
- 13.3 Plotting Curves
- 13.4 Speed-Time Graph
- 13.5 Area Under Speed-Time Graph: Distance
- 13.6 Horizontal and Vertical Lines
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OS 13.1

Coordinates



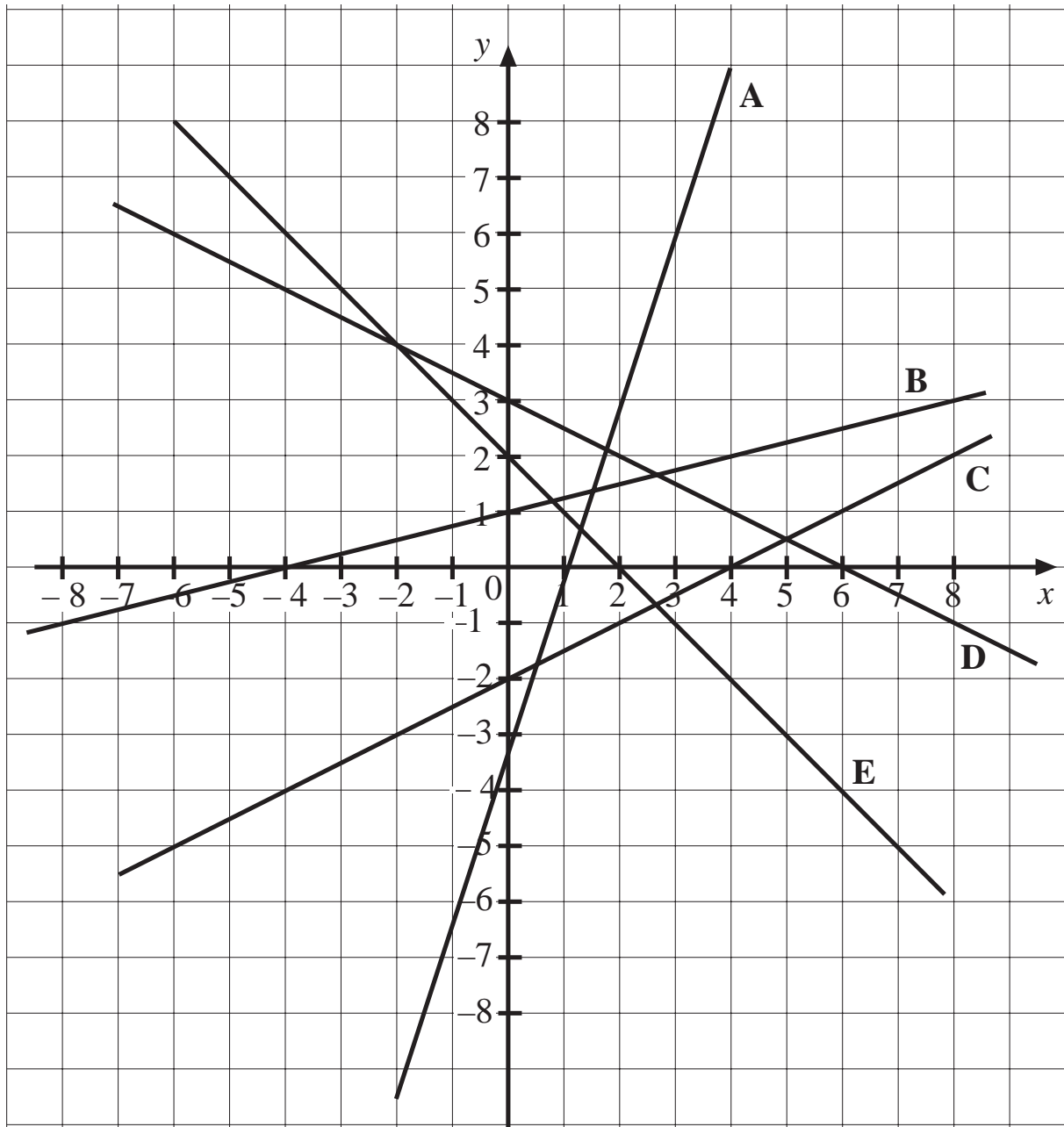
1. What are the coordinates of the points shown?
2. Show where the following points are located.

$$P(-4, -4) \quad Q(6, -4) \quad R(5, 3) \quad S(-5, 3)$$

What is the name given to the shape PQRS?

OS 13.2

Gradients



1. What is the gradient of each line?
2. Draw through the origin, lines with gradient

$$\frac{1}{2}, 1, 2 \text{ and } -\frac{1}{2}, -1, -2$$

OS 13.3

Plotting Curves

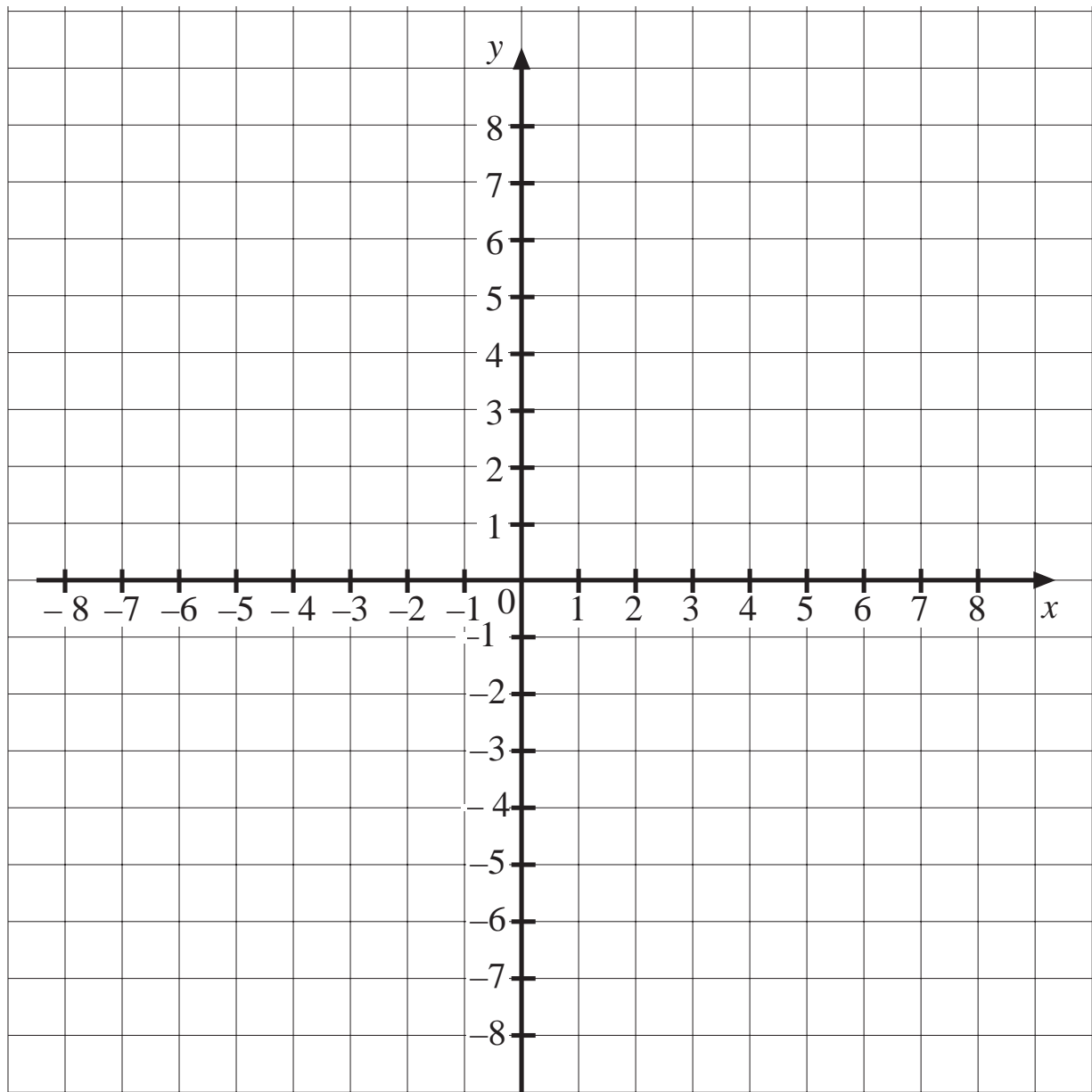
Sketch the following functions.

A: $y = x + 1$

x	-8	-6	-4	-2	0	2	4	6	8
y									

B: $y = \frac{1}{2}x^2$

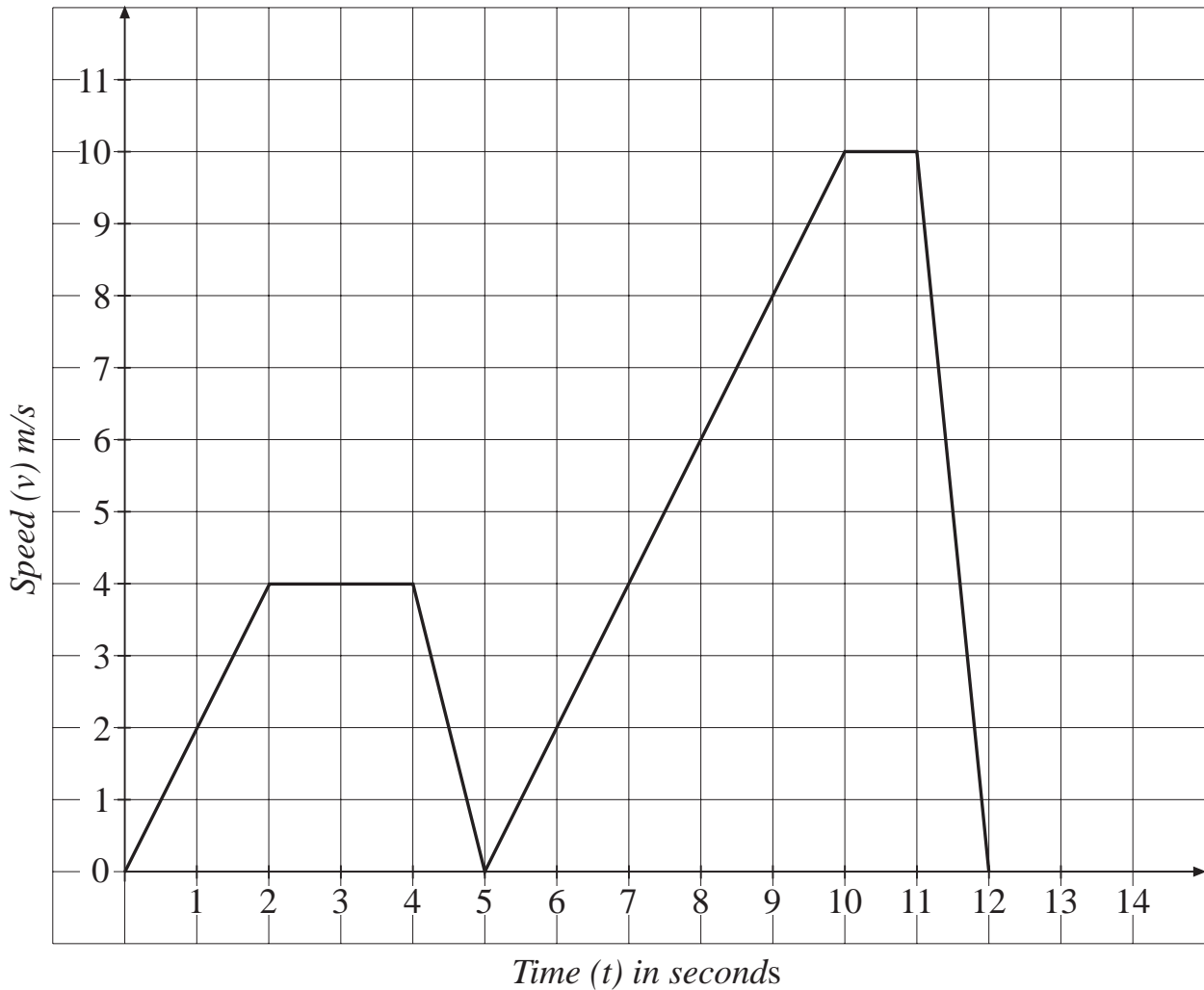
x	-4	-3	-2	-1	0	1	2	3	4
y									



OS 13.4

Speed-Time Graph

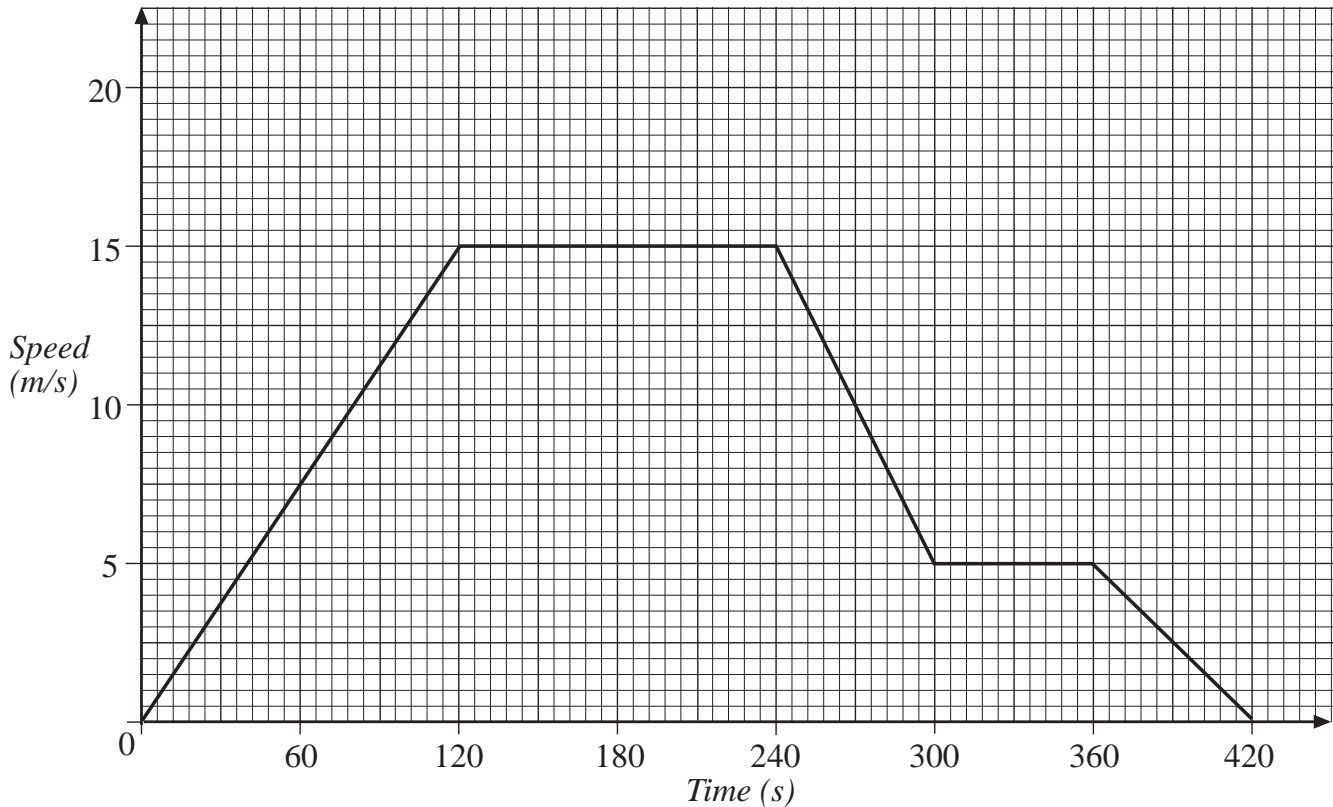
The speed-time graph shows the speeds of a cyclist at different times during a journey.



1. After 1 second what was the speed of the cyclist?
2. From $t = 2$ to $t = 4$, the cyclist was travelling at what speed?
3. After how many seconds did the cyclist make the first stop?
4. When $t = 9$, what was the speed of the cyclist?
5. At what time did the cyclist complete his journey?

OS 13.5*Area Under Speed-Time Graph: Distance*

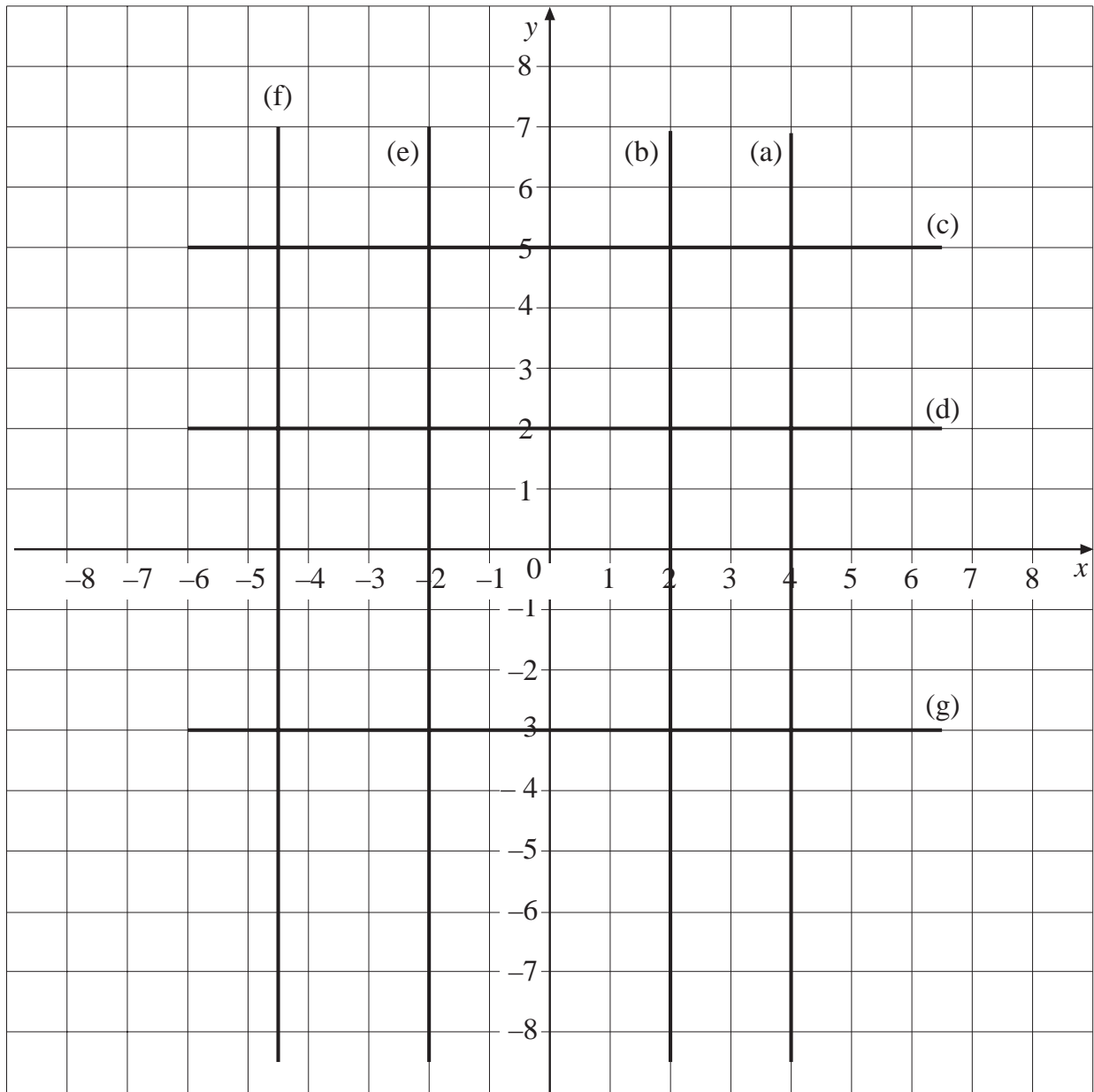
Here is a speed-time graph for a car.



1. What is the maximum speed reached by the car?
2. For how long does the car travel at this speed?
3. What distance does the car travel at this speed?
4. What distance does it travel before reaching this speed?
5. What is the total distance travelled on the journey?
6. What is the total time taken?
7. What is the average speed for the journey?

OS 13.6

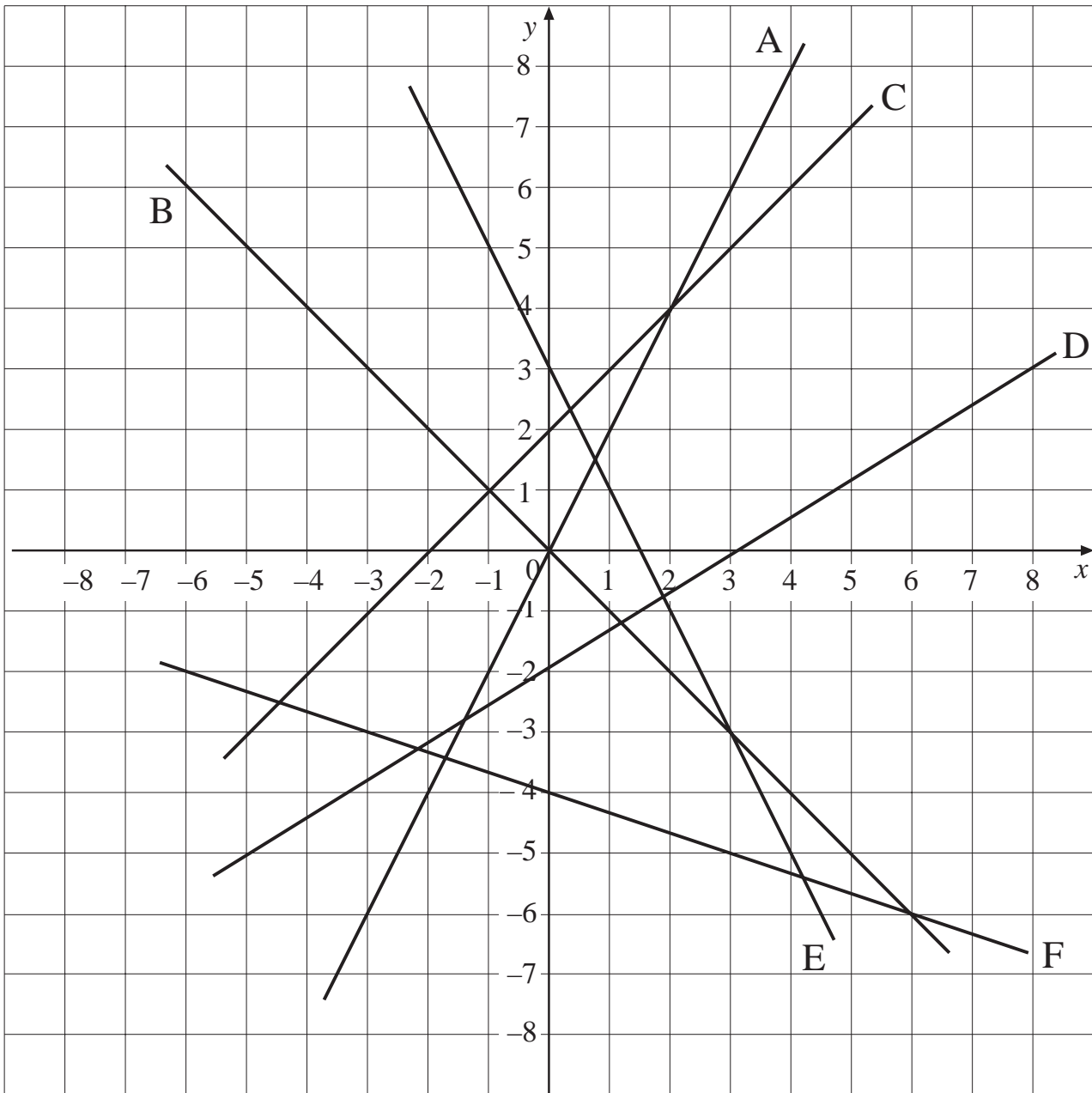
Horizontal and Vertical Lines



<i>Line</i>	<i>Horizontal or Vertical</i>	<i>Gradient</i>	<i>Equation</i>
(a)	V	infinity	$x = 4$
(b)			
(c)			
(d)			
(e)			
(f)			
(g)			

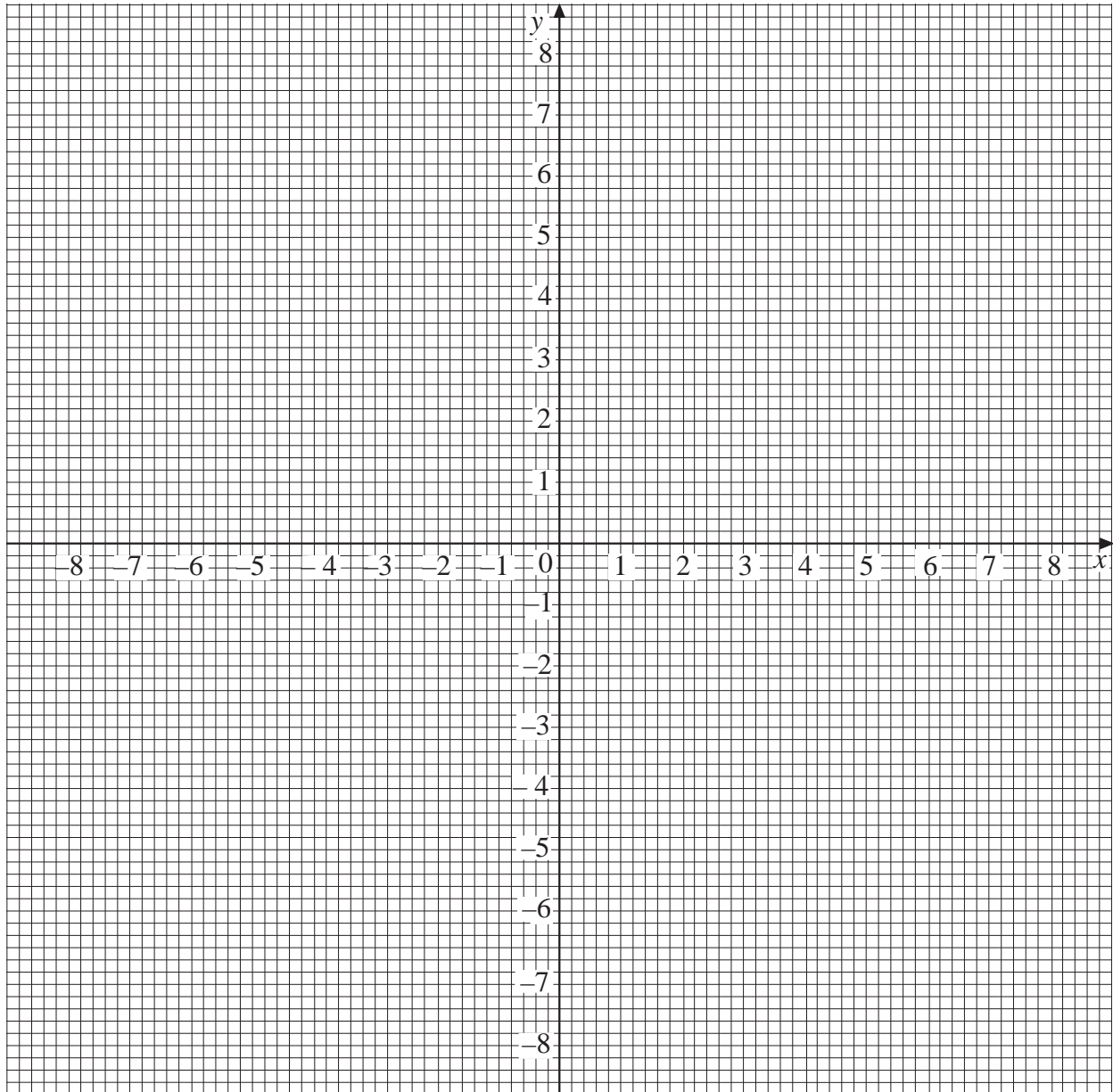
OS 13.7

Equations of Straight Lines



Line	<i>y</i> -intercept	Gradient	Equation
A			
B			
C			
D			
E			
F			

OS 13.8 *Graphical Solution of Simultaneous Equations*



What is the solution of the simultaneous equation

$$4x + 5y = -3$$

$$3x - 7y = -13$$

OS 13.9

Graphs of Common Functions

Match each equation to the appropriate sketch.

$$\text{A: } y = 1 - x^2$$

$$\text{B: } y = \frac{1}{2x}$$

$$\text{C: } y = 1 - x$$

$$\text{D: } y = 1 + x^3$$

$$\text{E: } y = x^2 - x$$

$$\text{F: } y = 1 + x^2$$

