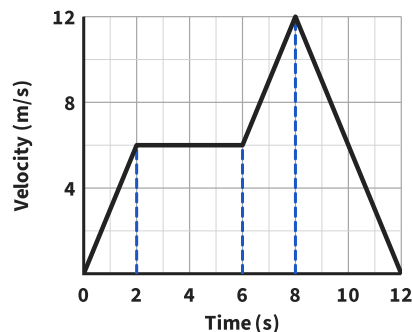


Area Under a Graph *stretch*

ANSWERS

1

Find the total distance travelled.

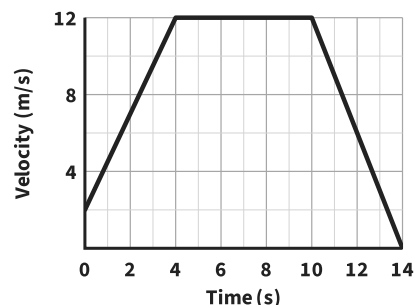


$$6 + 24 + 18 + 24 = 72$$

Answer 72 m

2

Find the scooter's acceleration in the first 4 s and its deceleration at the end.

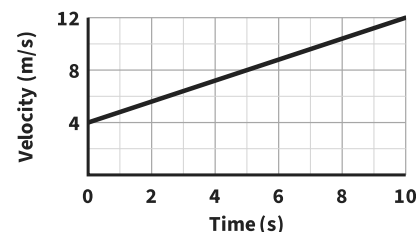


$$(12 - 0) \div 4 = 3, \quad 12 \div 4 = 3$$

Answer 3 m/s² and 3 m/s²

3

Sam says the distance is $\frac{1}{2} \times 10 \times 12 = 60$ m. Explain his mistake and find the distance.



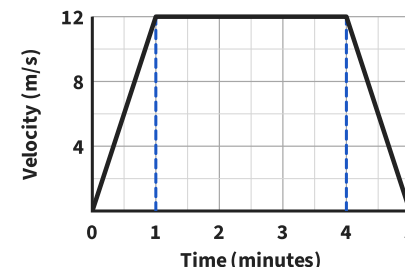
a trapezium: it starts at 4 m/s

$$\frac{1}{2} \times (4 + 12) \times 10 = 80$$

Answer 80 m

4

A drone's flight. Time is in minutes. How far does it fly? Answer in km.



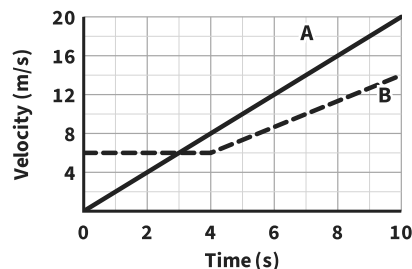
$$6 + 36 + 6 = 48, \quad 1 \text{ minute} = 60 \text{ s}$$

$$48 \times 60 = 2880 \text{ m}$$

Answer 2.88 km

5

Which car goes further in the 10 seconds, and by how much?



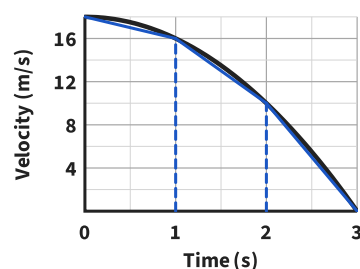
$$A: \frac{1}{2} \times 10 \times 20 = 100$$

$$B: 4 \times 6 + \frac{1}{2} \times (6 + 14) \times 6 = 84$$

Answer A, by 16 m

6

Estimate the braking distance with 3 strips of equal width.



heights 18, 16, 10 and 0

$$17 + 13 + 5 = 35$$

Answer 35 m

7

A lift starts from rest and speeds up steadily to 3 m/s in 2 seconds. It moves at 3 m/s, then slows down steadily and stops 2 seconds later. It rises 24 m in all. For how long does it move at 3 m/s?

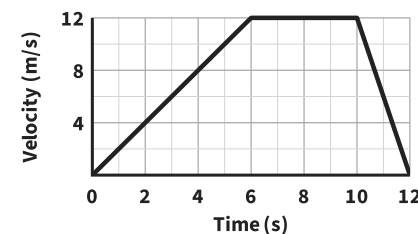
$$\frac{1}{2} \times 2 \times 3 + 3t + \frac{1}{2} \times 2 \times 3 = 24$$

$$6 + 3t = 24, \text{ so } t = 6$$

Answer 6 s

8

Ali says the bus goes further in the first 6 s than the last 6 s. Is he right? Show how you know.



$$\text{first 6 s: } \frac{1}{2} \times 6 \times 12 = 36$$

$$\text{last 6 s: } 4 \times 12 + \frac{1}{2} \times 2 \times 12 = 60$$

Reason No, 36 m then 60 m