



Relative Motion - set samples - paper 1

1. Hugo and Ines start walking towards each other along a path that is 32 miles long.
Hugo walks at 5 mph.
Ines walks at 3 mph.
They start at the same time and travel at constant speeds until they meet.

(a) What is the combined speed of both walkers?

ans _____

(b) At the moment they meet, how far has each walker gone?

ans _____

2. Two trains leave stations that are 780 km apart and travel towards each other.
Train A travels at 60 km/h.
Train B travels at 200 km/h.
They start at the same time and travel at constant speeds until they meet.

(a) How far does Train A travel before they meet?

ans _____

(b) How far from their own starting point is each train when they meet?

ans _____

3. Jenny and Sunil are 210 miles apart. Jenny starts travelling towards Sunil at 50 mph.
1 hour later, Sunil starts travelling towards Jenny at 30 mph.

(a) What distance remains between them when Sunil starts travelling?

ans _____

(b) What is the distance covered by Sunil?

ans _____



Relative Motion - set samples - Answers

1. (a) Combined speed = $5 + 3 = 8$ mph

Answer: 8 mph

- (b) Combined speed = $5 + 3 = 8$ mph

Time = $32 \div 8 = 4$ hours

Hugo: $5 \times 4 = 20$ miles

Ines: $3 \times 4 = 12$ miles

Check: $20 + 12 = 32$ miles

Answer: Hugo = 20 miles, Ines = 12 miles

2. (a) Combined speed = $60 + 200 = 260$ km/h

Time = $780 \div 260 = 3$ hours

Distance = $60 \times 3 = 180$ km

Answer: 180 km

- (b) Combined speed = $60 + 200 = 260$ km/h

Time = $780 \div 260 = 3$ hours

Train A: $60 \times 3 = 180$ km

Train B: $200 \times 3 = 600$ km

Check: $180 + 600 = 780$ km

Answer: Train A = 180 km, Train B = 600 km

3. (a) Distance covered by Jenny = $50 \times 1 = 50$ miles

Remaining gap = $210 - 50 = 160$ miles

Answer: 160 miles

- (b) Gap when both travelling = $210 - (50 \times 1) = 160$ miles

Combined speed = 80 mph

Time = $160 \div 80 = 2$ hours

Distance = $30 \times 2 = 60$ miles

Answer: 60 miles