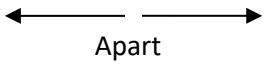
P6 Speed 2

In this worksheet, you will learn to solve speed questions on **Meeting up** and **Catching up scenarios**.

My Learning Notes on Speed 2!

1) Meeting up/Apart -> Opposite direction

OR



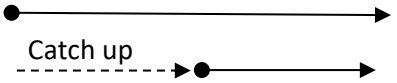
-> Start Same time ***or*** Different time?

Formula to apply:

Time taken to **meet/apart** -> $\frac{Total\ distance\ (travelled\ by\ \boldsymbol{both\ parties})}{Total\ speeds}$

2)

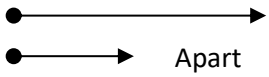
Catching up -> **Same direction**, Start at Different time



Formula to apply:

Time taken to '**catch up**' (or **overtake**) -> $\frac{Diff\ in\ distance\ (headstart)}{Diff\ in\ speed}$

3) Distance Apart -> **Same direction**, Start Same time



Formula to apply:

Distance Apart (Diff in distance) -> $Diff\ in\ Speed\ x\ \ Time\ taken$

Name: _____ Class: _____

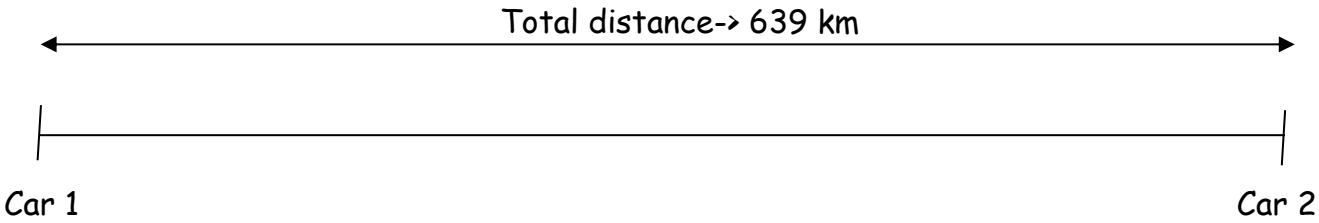
Date		Homework

Read the questions carefully and show your working clearly in the spaces provided. Remember to write the correct units in your final answer. Draw Distance-time line where applicable.

Meeting up / Apart

Opposite direction (towards one another), **same time** → ←

1. At 10 a.m., two cars started to travel from each end of a highway road towards each other at an average speed of 64 km/h and 78 km/h respectively. If the distance between the 2 ends of the highway road is 639 km, at what time will the two cars meet?



Method 1: Listing method

Time taken	*Car 1* →	*Car 2* ←	*Total distance travelled by BOTH*

Method 2: Application of formula

Answer: _____

2. Station P and Station Q were 420 km apart. At 7.15 a.m., Daniel left Station P for Station Q, while Zen set off from Station Q to Station P. At 10.15 a.m., they passed each other. Find Zen's average driving speed if his average speed was 40 km/h faster than Daniel's.

Answer: _____

3. A lorry left Town X for Town Y at an average speed of 50 km/h. At the same time, a truck left Town Y to Town X at the average speed of 20 km/h faster than the lorry. Both vehicles travelled along the same road which had a distance of 430 km. The two vehicles met at 3.20 a.m. At what time did the lorry start the journey?

Answer: _____

Opposite direction (towards one another), **Different time** → ←

4. A car travelled from Town F to Town G at an average speed of 84 km/h. After another 25 minutes, a motorcycle started to travel from Town G to Town F at an average speed of 75 km/h. If both vehicles meet each other on the way after travelling for 3.5 h, find the distance between Town F and Town G.

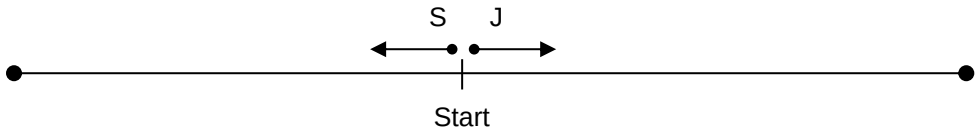
Answer: _____

5. The distance between City A to City B was 497 km. Mr Lin left City A at 2 p.m. and travelled towards City B at an average speed of 70 km/h. Mr Keng left City B 30 minutes later and travelled towards City A along the same expressway at an average speed of 84 km/h. At what time would they meet each other?

Answer: _____

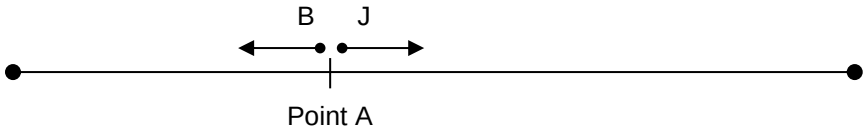
Opposite direction (**away** from one another), **same time** ⟵ ⟶

6. Starting from the same position on a track, Jacob and Simon skated in the opposite direction. Simon skated at an average speed of 4 km/h slower than Jacob. After 45 minutes, they were 55.5 km apart. Find the average skating speed of Jacob.



Answer: _____

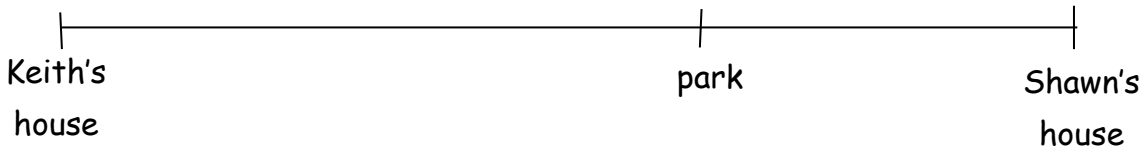
7. Jonathan and Benjamin started brisk walking from Point A but in opposite directions. After walking for $\frac{5}{6}$ h, they were 8 km apart. Given that Benjamin's average walking speed was 3.6 km/h, find their difference in average speed.



Answer: _____

Opposite direction (away from one another), **Different time** ⟵ ⟶

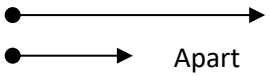
8. Keith and Shawn met at a park and decide to jog in an opposite direction towards their house. Keith's average jogging speed was 10 km/h and Shawn's average jogging speed was 8 km/h. Shawn started to jog after Keith had jogged for 10 min. After Shawn had jogged for 55 minutes, both of them reached their respective house. Find the distance between Keith's and Shawn's house? Give your answer correct to 2 decimal places.



Answer: _____

9. Kim and Joanne started jogging at the same time, from the same point along the same path but in opposite directions. Joanne started to jog 5 minutes earlier than Kim. After Kim had jogged for 40 minutes, they were 7.6 km apart. Given that Kim's average jogging speed was 6 km/h, find Joanne's average jogging speed.

Answer: _____



Distance Apart (Difference in distance) -> Same direction, same time

10. Mark and Ken started cycling along the same track at a park from point A to point B at the same time. When Mark reached point B in 40 minutes, Ken had covered only $\frac{5}{9}$ of the distance. If Mark cycled 8 km/h faster than Ken, find Ken's average cycling speed.

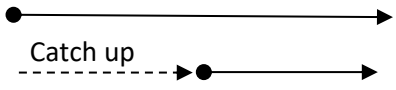
Point A Point B

Answer: _____

11. Mr Tan and Mr Mak drove along a straight road from point X to point Y. They started at the same time. When Mr Tan reached point Y in 1.3h, Mr Mak had covered only $\frac{3}{5}$ of the distance. If Mr Tan's average driving speed was 30 km/h faster than Mr Mak, find Mr Tan's average driving speed.

Answer: _____

Catching up/Overtaking (Same direction, Different time)



12. At 9.48 a.m., Mr Koh's car passed a certain point A, travelling at an average speed of 75 km/h. At 11 a.m., Mr Lee's car started off from point A at an average speed of 90 km/h in pursuit of Mr Koh's car. At what time did Mr Lee's car overtake Mr Koh's car?

Answer: _____

13. Mr Gan left State W at 9 a.m. and travelled towards State Z at an average speed of 90 km/h. Mr Tan left State W 40 minutes later and travelled towards State Z along the same expressway. Mr Tan's speed was 25 km/h faster than Mr Gan. At what time would Mr Tan overtake Mr Gan?

Answer: _____

14. At 9 a.m., Jerome left Phoenix Town for Yorkshire Town which was 540 km away. 2 hours later, Michael left Phoenix Town for Yorkshire Town. He travelled at an average speed of 40 km/h faster than Jerome and overtook him at 3 p.m.

    (a) What was Jerome's average speed?

    (b) How far was Jerome from Yorkshire Town when Michael reached his destination?

Answer: (a) _____

(b) _____

15. Diana started walking from school towards the library at an average speed of 7 km/h. 48 minutes later, Sara started cycling from the same school as Diana towards the library, at an average speed of 4 km/h faster than Diana. After some time, Sara managed to catch up with Diana.

(a) If Sara started cycling at 9.42 a.m., at what time did she catch up with Diana?

(b) How far had Diana cycled when Sara caught up with her?

Answer: (a) _____

(b) _____