P6 Speed 1

You will be learning on how to:

a) Understand the concept of speed
b) Calculate speed, distance or time given the other two quantities.
c) Write speed in different units such as km/h, m/min, m/s and cm/s
d) Solve word problems involving speed and average speed.

My Learning Notes on Speed 1!

1)

Name: _____ Class: _____

Date	Homework

What is Speed?

Speed is the _____ travelled per _____.

The standard units of measurements of Speed are _____.

A. **Understanding Speed**.

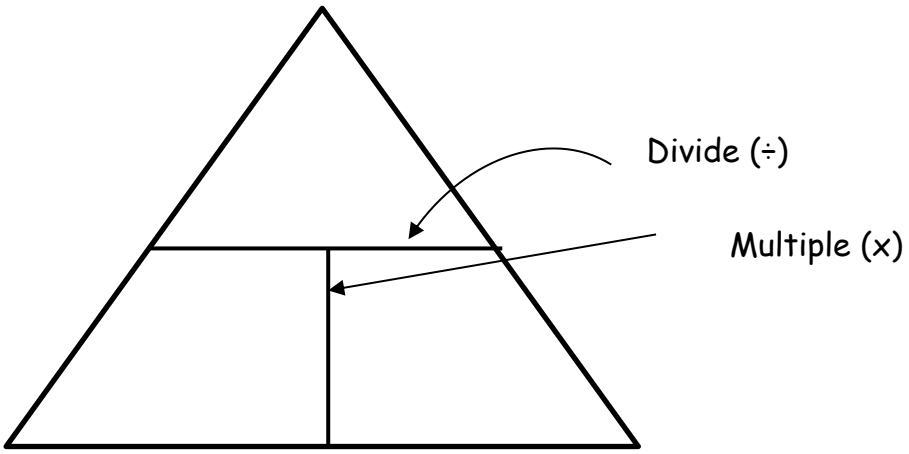
i) When Vehicle A is travelling at 70 km/h, it means in 1 h, it travels _____.

ii) When Vehicle B is travelling at 2000 m/min, it means in 1 min, it travels _____.

iii) When Vehicle C is travelling at 2400 cm/s, it means in 1 s, it travels _____.

iv) When Vehicle D is travelling at 20 km/h **faster**, it means 1 h, it travels _____ **more**.

To compute Speed: Use the **Speed Triangle Formula**
Fill in the blanks.



Speed -> _____ ÷ _____

Time taken (Duration) -> _____ ÷ _____

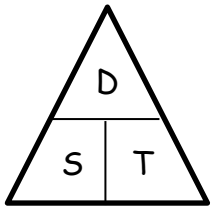
Note: Conversion of time (h to min -> **x 60 min**, min to h -> **÷ 60**):

0.2 h = _____ min $\frac{1}{4}$ h = _____ min 18 min = _____ h

0.15h = _____ min $\frac{5}{12}$ h = _____ min 40 min = _____ h

Distance -> _____ x _____

B. Complete the table below. Use only the standard unit of measurements, i.e. km/h, m/min, m/s or cm/s. **Note:** All units of measurement for the components must be consistent to one another.



	Distance (S X T)	Time ($\frac{D}{S}$)	Speed ($\frac{D}{T}$)
1.	300 km	2 h	
2.	60 km	60 min	
3.	150 m	0.5 h	
4.	90 cm	45 s	
5.	50 m	40 s	
6.	0.72 km		90 m/min

	Distance (S X T)	Time $(\frac{D}{S})$	Speed $(\frac{D}{T})$
7.		90 min	10 km/h
8.	36 000 m		54 km/h
9.		135 min	6 km/h
10.	2.5 km		125 m/min
11		2 min	16 cm/s
12.	1.5 m		7.5 cm/s

What is Average Speed?

Average speed is computed using the _____ travelled divided by the _____. The total time taken includes the stopping time/ rest time. This also means that the speed is **not constant** throughout the journey.

Let's look at the following example below. Is the calculation of average speed correct?

Example 1:
Mr. Lim travelled at an average speed of 80 km/h for 2.5 hours for a distance of 200 km. He then continued his remaining journey of 180 km at an average speed of 120 km/h for 1.5 hours. What was his average speed for the whole journey?

Solution 1:

Average speed for whole journey → (80 + 120) ÷ 2 → **100 km/h**

Solution 2:

Total distance → 200 + 180 = 380 km

Total time taken → 2.5 + 1.5 = 4

Average speed for whole journey → $\frac{380}{4}$ → **95 km/h**

Your answer: _____

Is average speed always referred to the total journey?
Answer: _____

_____

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

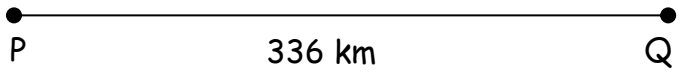
1. A marble rolled 3.5 m in 14 seconds. Find its average speed in cm/s.

Answer: _____

2. A train left the Station A at 8.55 a.m. It reached Station B after travelling 325 000 m at a constant speed of 100 km/h. At what time did the train reach Station B?

Answer: _____

3. Clark drove from Town P to Town Q at an average speed of 80 km/h. He arrived at Town Q at 11.50 a.m. At what time did he leave Town P?



Answer: _____

4. Kenny cycles to a shopping mall which was 15 km away from his house. He took 56 min to cycle from his house to the shopping mall and back again. If Kenny cycles at an average speed of 25 km/h from his house to the shopping mall, find his average cycling speed from the shopping mall to his house?

Answer: _____

5. Bill took 25 min to run around a 400-m track 8 times. What was his average speed in m/min?

Answer: _____

6. A motorist travelled on a highway for 2 hours at 90 km/h. He then travelled for another 3 hours at 110 km/h. What was his average speed for the whole journey?

Answer: _____

7. Emily drove from Town A to Town B. She travelled the first 50 km at an average speed of 75 km/h. She travelled the remaining 196 km at an average speed of 84 km/h. Find the total time taken for the whole journey.

Answer: _____

8. Becky covered $\frac{2}{5}$ of a journey at an average speed of 62.5 km/h. She covered the remaining 150 km in $\frac{9}{10}$ h. Find her average speed for the whole journey.

Answer: _____

9. Clara took 5 hours to travel from City A to City B. Her average speed for the whole journey was 64 km/h. For the first $\frac{3}{4}$ of the journey, she travelled at an average speed of 60 km/h. Find her average speed of the remaining journey.

Answer: _____

10. Armando drove from Town A to Town B. After travelling $\frac{1}{3}$ of the journey at an average speed of 75 km/h, he continued to travel another 300 km to reach Town B. If his average speed for the whole journey was 90 km/h, find his average speed for the last $\frac{2}{3}$ of the journey.

Answer: _____

11. Annie took 3 h to drive from Village A to Village B at an average speed of 100 km/h. She rested for $\frac{1}{2}$ hour and travelled to Village C at an average speed of 70 km/h for 2 h. Find Annie's average speed for the whole journey?

Answer: _____

12. A motorist travelled a distance of 420 km from Smiley Town to Jolly Town. For the first $\frac{5}{8}$ of his journey, he travelled at an average speed of 75 km/h. He then stopped and rested for 35 minutes. He continued the rest of the journey at an average speed of 63 km/h.

    (a) How long did the motorist take to travel the first $\frac{5}{8}$ of the journey?

    (b) Find the motorist's average speed for the whole journey. Give your answer correct to 2 decimal places.

Answer: (a) _____

(b) _____

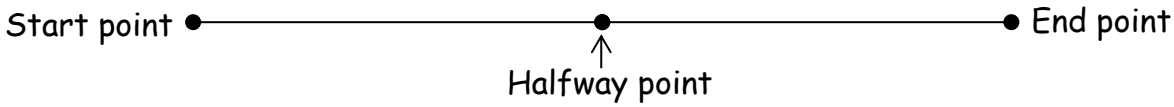
13. Two villages A and B are 650 km apart. Larry and Mark travelled from Village A to Village B along the same route. Mark drove at an average speed of 50 km/h. Larry left Village A 45 minutes later than Mark but arrived at Village B $2\frac{1}{4}$ h earlier. Find the speed at which Larry drove.

Answer: _____

14. *Lucy and Nancy started running at the same time along a 2.4 km track. Both did not change their speeds from start to finish. Lucy ran at 96 m/min. When she reached the end of the track, Nancy was 525 m behind her. What was Nancy's running speed in m/min?

Answer: _____

15. *Ronald and Karen started jogging at the same time along the route shown below. Both did not change their speeds throughout. After 25 min, Ronald was at the halfway point and Karen was 160 m behind. Ronald reached the end point 8 min before Karen. What was the distance of the route?



Answer: _____

16. *Zeanne and Felicia took part in a cycling race. Zeanne cycled at a speed of 15 km/h. Both of them did not change their speed throughout the race. When Felicia covered $\frac{1}{3}$ the distance, Zeanne was 2.25 km in front of her. Zeanne reached the finishing line at 9.50 a.m. What time did Felicia reach the finishing line?

Answer: _____

For more practices – PSLE QNS! (See Q14 to Q16 for reference)

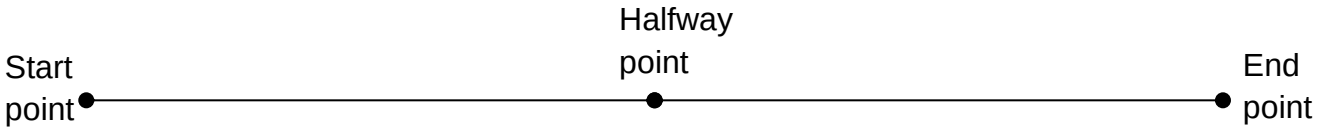
17. Mei and Lin took part in a cycling race. Mei cycled at a speed of 20 km/h. Both of them did not change their speed throughout the race. When Lin covered $\frac{1}{2}$ the distance, Mei was 3.5 km in front of her. Mei reached the finishing line at 10.45 a.m. What time did Lin reach the finishing line? [PSLE 2007-2011]

Answer: _____

18. Sharon and Xinyi started cycling at the same time along a 4.5 km track. Both did not change the speeds from start to finish. Sharon cycled at 375 m/min. When she reached the end of the track, Xinyi was 600 m behind her. What was Xinyi's cycling speed m/min? [PSLE 2013, P2Q11]

Answer: _____

19. Dan and Ellen started jogging at the same time along the route shown below. Both did not change their speeds throughout. After 35 min, Dan was at the halfway point and Ellen was 300 m behind. Dan reached the end point 5 min before Ellen. What was the distance of the route? [PSLE 2014, P2Q8]



Answer: _____

EXERCISE TIME!!!

Find your walking/jogging/running speed!

Go to a stadium or playground park and walk/jog/run a distance of 100 m to 1.6 km and record your reading.

You can also write your NAPFA 1.6 km's running record here! 😊

Distance I walked/jogged/ran (circle your activity): _____

Time taken to complete: _____

My walking/jogging/running speed: _____

RESEARCH TIME!!!

Do an online search and find out:

a) the average running speeds of 3 types of animals; and
b) the average speeds of 3 types of vehicles travelling along the main road.

Do remember to write the correct unit of measurement for the speed!

Types of Animals	Average speed

Types of Vehicles	Average speed

Have fun researching!!!