Speed

Name: _____ **Date:** _____

Quick Review

Speed describes how quickly an object travels a certain distance.

Speed = distance ÷ time

v = d / t

Where:

- v = speed
- d = distance
- t = time
- The SI unit for speed is **metres per second (m/s)**.

The equation can also be rearranged:

d = v × t

t = d / v

Average speed describes the speed over an entire journey.

Instantaneous speed is the speed of an object at one particular moment.

Part A — Multiple Choice

1. Speed is the rate at which:

A. time changes
B. distance is travelled
C. mass changes
D. force is applied

2. Which equation is used to calculate speed?

A. v = d / t
B. v = d × t
C. v = t / d
D. v = d + t

© YE yedu.ca

Speed

3. What is the SI unit for speed?

A. km
B. s
C. m
D. m/s

4. A car's speedometer shows its:

A. average speed
B. total distance
C. instantaneous speed
D. travel time

5. Which equation can be used to calculate distance?

A. $d = v / t$
B. $d = v \times t$
C. $d = t / v$
D. $d = v + t$

Part B — Calculate Speed

Show your working and include units.

1. A runner travels 100 m in 20 s. Speed = _____

2. A cyclist travels 240 m in 30 s. Speed = _____

3. A car travels 600 m in 40 s. Speed = _____

4. A student walks 150 m in 100 s. Speed = _____

Part C — Find Distance or Time

1. A car travels at 20 m/s for 15 s. How far does it travel? Distance = _____

2. A cyclist travels at 6 m/s for 30 s. How far does the cyclist travel? Distance = _____

3. A runner travels 200 m at an average speed of 5 m/s. How long does the journey take?

Time = _____

4. A train travels 900 m at 30 m/s. How long does it take? Time = _____

Part D — Average or Instantaneous Speed?

© YE yedu.ca

Speed

Circle A or I for **average** or **instantaneous**.

1. A speedometer shows 65 km/h at one particular moment. A / I

2. A runner completes a 1000 m race in 200 s, giving a speed of 5 m/s for the whole race. A / I

3. A police speed camera measures a car travelling at 72 km/h. A / I

4. A cyclist travels 12 km in 30 minutes and calculates the speed for the entire journey. A / I

Part E — Compare the Motion

Three students run the same distance.

Student	Distance	Time
A	100 m	20 s
B	100 m	25 s
C	100 m	10 s

1. Calculate the average speed of Student A.

---

2. Calculate the average speed of Student B.

---

3. Calculate the average speed of Student C.

---

4. Which student travelled fastest?

---

5. How can you tell?

Part F — Apply Your Knowledge

1. A bus travels 1200 m in 60 s. Calculate its average speed.

© YE yedu.ca

Speed

2. A skateboarder moves at 4 m/s for 25 s. Calculate the distance travelled.

3. A swimmer travels 100 m at an average speed of 2 m/s. Calculate the time taken.

4. Two runners complete a 200 m race. Runner X takes 40 s and Runner Y takes 50 s. Which runner has the greater average speed? Show your calculations.

Exit Ticket

1. Define speed.

2. Write the equation for speed.

3. What is the SI unit for speed?

4. A car travels 300 m in 20 s. Calculate its average speed.

5. Explain the difference between average speed and instantaneous speed.

© YE yedu.ca

Speed

Speed Worksheet — Answer Key

Part A — Multiple Choice

1. **B — distance is travelled**
2. **A — v = d / t**
3. **D — m/s**
4. **C — instantaneous speed**
5. **B — d = v × t**

Part B — Calculate Speed

1. Runner: 100 m in 20 s

v = d / t
v = 100 / 20
v = 5 m/s

2. Cyclist: 240 m in 30 s

v = 240 / 30
v = 8 m/s

3. Car: 600 m in 40 s

v = 600 / 40
v = 15 m/s

4. Student: 150 m in 100 s

v = 150 / 100
v = 1.5 m/s

Part C — Find Distance or Time

1. Car: 20 m/s for 15 s

d = v × t
d = 20 × 15
d = 300 m

2. Cyclist: 6 m/s for 30 s

d = 6 × 30
d = 180 m

3. Runner: 200 m at 5 m/s

© YE yedu.ca

Speed

t = d / v
t = 200 / 5
t = 40 s

4. Train: 900 m at 30 m/s

t = 900 / 30
t = 30 s

Part D — Average or Instantaneous Speed?

1. Speedometer showing 65 km/h at one moment — **Instantaneous**
2. 1000 m race completed in 200 s — **Average**
3. Police speed camera measurement — **Instantaneous**
4. Cyclist calculating speed for entire journey — **Average**

Part E — Compare the Motion

1. Student A

v = 100 / 20
5 m/s

2. Student B

v = 100 / 25
4 m/s

3. Student C

v = 100 / 10
10 m/s

4. Which student travelled fastest?

Student C

5. How can you tell?

Student C had the **greatest average speed (10 m/s)** and covered the same distance in the shortest time.

Part F — Apply Your Knowledge

1. Bus: 1200 m in 60 s

v = 1200 / 60
v = 20 m/s

© YE yedu.ca

Speed

2. Skateboarder: 4 m/s for 25 s

d = 4 × 25
d = 100 m

3. Swimmer: 100 m at 2 m/s

t = 100 / 2
t = 50 s

4. Runner X and Runner Y

Runner X:

v = 200 / 40
v = 5 m/s

Runner Y:

v = 200 / 50
v = 4 m/s

Therefore, **Runner X has the greater average speed**.

Exit Ticket

1. Define speed.

Speed is the **rate at which distance is travelled**.

2. Write the equation for speed.

v = d / t

or

speed = distance / time

3. What is the SI unit for speed?

metres per second (m/s)

4. Car: 300 m in 20 s

v = 300 / 20
v = 15 m/s

© YE yedu.ca

Speed

5. Explain the difference between average speed and instantaneous speed.

Average speed is calculated over an entire journey or time interval.

Instantaneous speed is the speed of an object at one particular moment.

© YE yedu.ca