The National Orthodox School Shmaisani

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Name: **Title: Speed Worksheet**

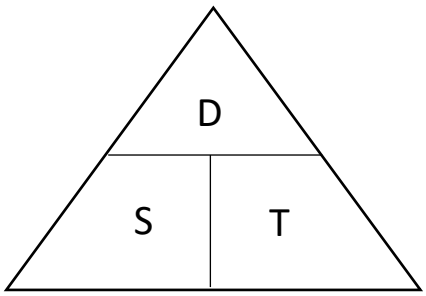
Grade-Section: 7- ……CS

Objectives:

1- Define Speed.
2- Calculate the speed.
3- Revise unit conversion.

Speed is the measure of how fast an object is moving. The units of speed are either m/s (meters per second) or km/h (kilometer per hour).

We calculate speed using the following triangle:



$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$Distance = Speed \; x \; Time$$

$$Time = \frac{Distance}{Speed}$$

Unit Conversion:

Keep in mind the following conversions

1 km = 1000 m

1 hour = 60 min, 1 min = 60 seconds, 1 hour = 3600 seconds

Show your work please and answers rounded to 2 d.p

Core: (please solve the following five questions)

Question 1) A sprinter runs 120 meters down athletics track in 10 seconds, how fast is he travelling in m/s?

$$S = \frac{d}{t} = \frac{120m}{10s} = 12\ m/s$$

Question 2) A man walks 2km from a bus station to his work taking him 3 hrs, how fast is the man walking at in km/h?

$$S = \frac{d}{t} = \frac{2km}{3h} = 0.67\ km/h$$

Question 3) A police car drives 124 km in 3 hours. What is its average speed in kilometers per hour?

$$S = \frac{d}{t} = \frac{124km}{3h} = 41.33\ km/h$$

Question 4) An airplane flies 3500 km in 2 hours. What is its average speed in kilometers per hour?

$$S = \frac{d}{t} = \frac{3500km}{2h} = 1750\ km/h$$

Question 5) A cyclist takes 30 seconds to travel 375 meters. What is its average speed in meters per second?

$$S = \frac{d}{t} = \frac{375m}{30s} = 12.50\ m/s$$

Show your work please and answers rounded to 2 d.p

Intermediate: (Solve 4 of the following 5 questions)

Question 6) A car is travelling 300 km along a road in 10800 seconds. How fast is it travelling in:

a. Km/s?

$$S = \frac{d}{t} = \frac{300km}{10800s} = 0.03\ km/s$$

b. Km/h?

$$S = \frac{d}{t} = \frac{300km}{10800s\ \div 3600} = \frac{300km}{3h} = 100km/h$$

Reminder: 1 hour = 3600s

c. m/s?

$$S = \frac{d}{t} = \frac{300km \times 1000}{10800s} = \frac{300000m}{10800s} = 27.78\ m/s$$

Reminder: 1 km = 1000 m

Question 7) An airplane flies with a constant speed of 840 km/h. How far can it travel in 5.3 hours?

$$d = S \times t = 840 \times 5.3 = 4452\ km$$

Question 8) Noah roller skates with a constant speed of 4 m/s. How far can he travel in 35.7 seconds?

$$d = S \times t = 4 \times 35.7 = 142.8\ m$$

Question 9) Julia drives her car with a constant speed of 71 km/h. How long will she take to travel a distance of 16.33 kilometers?

$$t = \frac{d}{S} = \frac{16.33}{71} = 0.23\ h$$

Question 10) A taxi hurries with a constant speed of 105 km/h. How long will it take to travel a distance of 207.9 kilometers?

$$t = \frac{d}{S} = \frac{207.9}{105} = 1.98\ h$$

Advanced: (Solve 3 of the following 4 questions)

Question 11) Kato cycles at a third of the speed of his friend Luke, who takes 3 minutes to travel 1.8 km, what is Kato's speed in m/s?

$$S_{Kato} = \frac{1}{3} \times S_{Luke}$$

$$S_{Luke} = \frac{d}{t} = \frac{1.8km}{3min} = \frac{1.8km \times 1000}{3min \times 60} = \frac{1800m}{180\ s} = 10\ m/s$$

$$S_{Kato} = \frac{1}{3} \times 10 = \frac{10}{3} = 3.33\ m/s$$

We changed the km to m and the minutes to s because the question was asking us for the speed in m/s not km/h.

Show your work please and answers rounded to 2 d.p

Question 12) An airplane flies 27 km in 36 minutes. What is its average speed in kilometers per hour?

$$S = \frac{d}{t} = \frac{27km}{36\ min} = \frac{27}{36 \div 60} = \frac{27}{0.6} = 45\ km/h$$

Question 13) Abigail rides her horse with a constant speed of 14 m/s. How far can she travel in 40 minutes?

$$d = S \times t = 14 \times (40 \times 60) = 14 \times 2400 = 33600m$$

Question 14) An airplane flies for $1\frac{1}{2}$ hours with a constant speed of 880 km/h and then for another 30 minutes with a constant speed of 800 km/h. What distance did it go?

First part of the journey:

$$S = 880\ km/h$$

$$t = 1\frac{1}{2}h = 1.5\ h$$

$$d = S \times t = 880 \times 1.5 = 1320\ km$$

Second part of the journey:

$$S = 800\ km/h$$

$$t = 30min = 0.5\ h$$

$$d = S \times t = 800 \times 0.5 = 400\ km$$

$$total\ distance = d_T = d_1 + d_2 = 1320 + 400 = 1720\ km$$