

Calculating Speed, Distance, Time, & Velocity

Speed is defined as “the distance the object travels in one unit of time.” Speed tells how fast an object is moving. The rate for speed requires two units: one for distance, the other for time. Speed can be expressed by combining any distance unit with any time unit.

<u>Distance Unit</u>	<u>Time Unit</u>	<u>Speed Unit</u>	<u>Means</u>
<u> Km </u>	<u> hr </u>	<u> Km/hr </u>	An object travels # of <u> Km </u> in <u> 1hr </u>
<u> Cm </u>	<u> min </u>	<u> cm/min </u>	An object travels # of <u> cm </u> in <u> 1min </u>
<u> m </u>	<u> s </u>	<u> m/s </u>	An object travels # of <u> m </u> in <u> 1s </u>

To calculate speed you divide the distance number by the time number and express the answer with a speed unit. **The formula for speed is:**

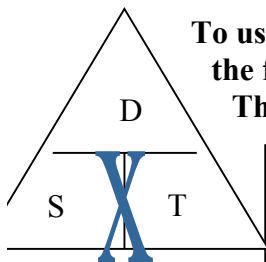
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$



Practice: Use a calculator to calculate the speed. Don't forget to have correct units in your final answer!

Distance	Time	Equation	Speed
600 km	30 hr	600/ 30	20 Km/hr
144 miles	12 hr	144/12	12 mi/hr
96 miles	24 min	96 ÷ 24	4 mi/min
1280 meters	4 min	1280 ÷ 4	320 m/min

To use this diagram, cover up the letter for which you are looking. The remaining letters show the formula to use. The letter D stands for distance; T stands for time and S stands for speed. The X means to multiply.



What is the formula to calculate distance?

D = S X T

What is the formula to calculate time?

T = D ÷ S

Fill in the chart with the missing information. Make sure you use the correct units.

Equation Used	Distance	Time	Speed
D= 70 X 3	210 mi	3 hr	70 mi/hr
T = 96 ÷ 4	96 km	24 min	4km/min
D = 11 X 12	132 cm	12 sec	11 cm/sec
T = 600 ÷ 20	600 km	30 hr	20 km/hr
S = 80 ÷ 2.5	80 m	2.5 hr	32 m/hr

Now, show the formula, equation, answer and correct unit in the spaces provided.

1. You ride your bike for 4 minutes at a speed of 40 m/min. What was your **distance** traveled?

Answer: 160 m

Formula: _____ Equation: _____

$$D = S \times T$$

$$D = 40 \times 4$$



2. A spider crawled along a branch that was 132 centimeters at a speed of 11 cm/sec. What **time** did it take the spider to crawl across the branch?

Answer: 12 s

Formula: _____ Equation: _____

$$T = D \div S$$

$$T = 132 \div 11$$



3. The arrow flew at a speed of 30 m/sec in a span of 30 seconds. What is the arrow's **distance** traveled?

Answer: 900 m

Formula: _____ Equation: _____

$$D = S \times T$$

$$D = 30 \times 30$$



Remember, a velocity shows a speed and a direction. Use help in directions. Again, show correct units.

4. The workers placed 125 meters of asphalt in 2.5 hours from Dallas. What was their average **velocity**?

Answer: 50 m/h NE

Formula: _____ Equation: _____

Velocity = speed + direction

$$S = D \div T$$

$$S = 125 \div 2.5 = 50$$

Direction = Northeast (NE)

5. The Speed Racer is on his way to Houston from Austin. The speed racer drove for 24 minutes and found out that he traveled 144 kilometers. What was his average **velocity**?

Answer: 6 km/ min SE

Formula: _____ Equation: _____

$$V = S + \text{direction} \quad S = D \div T \quad S = 144 \div 24 = 6$$

Direction = Southeast (SE)



the map to

Austin to

