

Speed and Velocity Notes

M
O
T
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O
N

mph

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

Time

Direction

Distance

km/hr

Speed and Velocity

Speed



- Measures the change in position over a period of time
- Units include a distance and a time
EX: mph, km/hr, m/s

Speed and Velocity

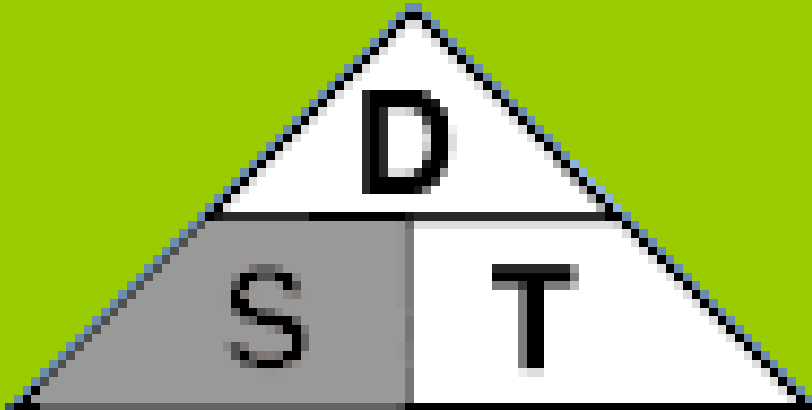
Calculations

$$r = \frac{d}{t}$$

- Must know the distance an object moved AND the amount of time it took
- Speed equals distance divided by time
- Formula:

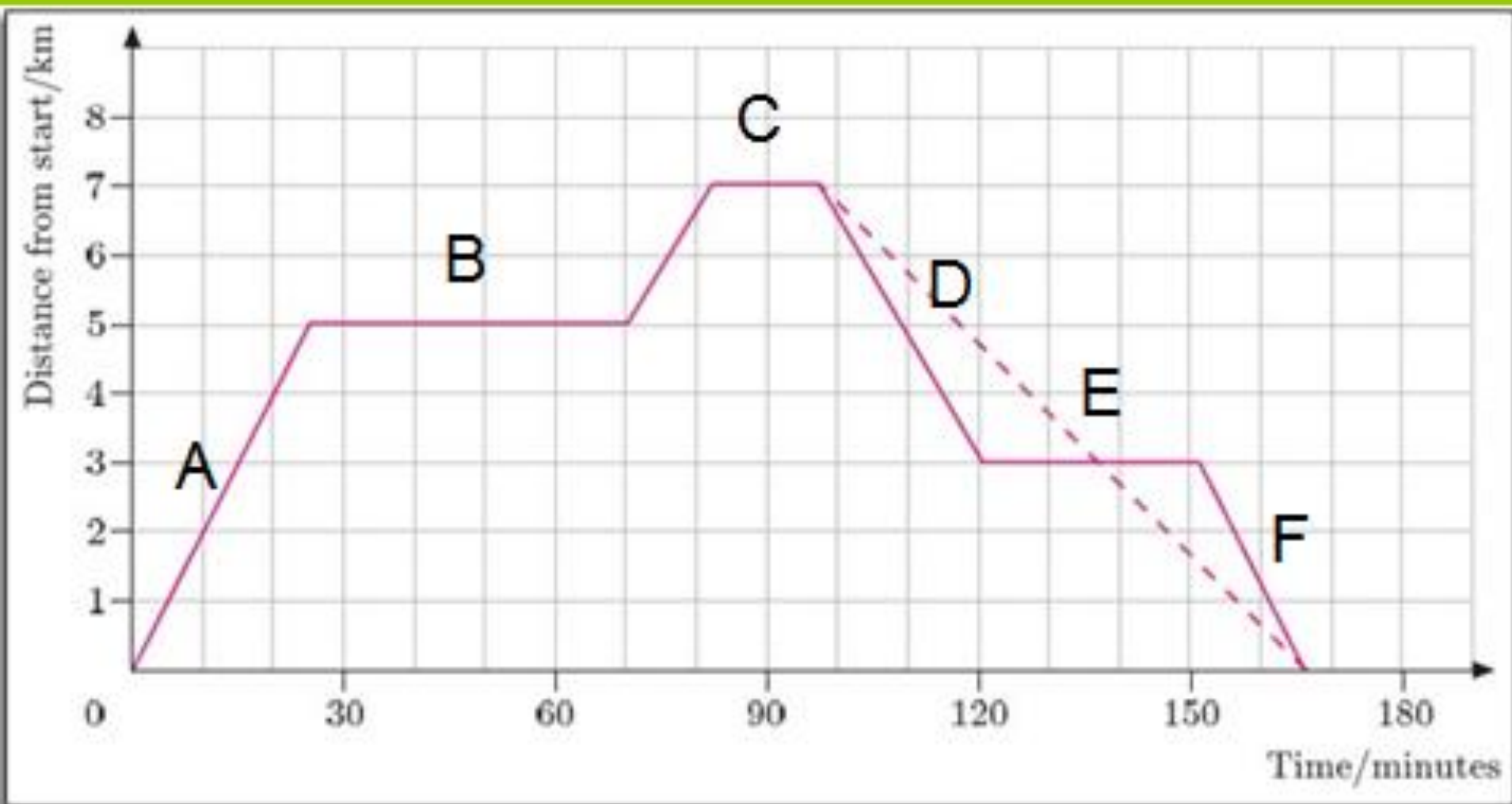
$$S = \frac{D}{T}$$

Speed Formula



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

The Wheels on the Bus...



Speed and Velocity

Examples:

- A cheetah can run about 280 miles in 4 hours, what is its speed?



Speed and Velocity

Examples:

- A plane's speed is 400 mph and was able to travel 1200 miles. How long did this trip take?



Speed and Velocity

Examples:

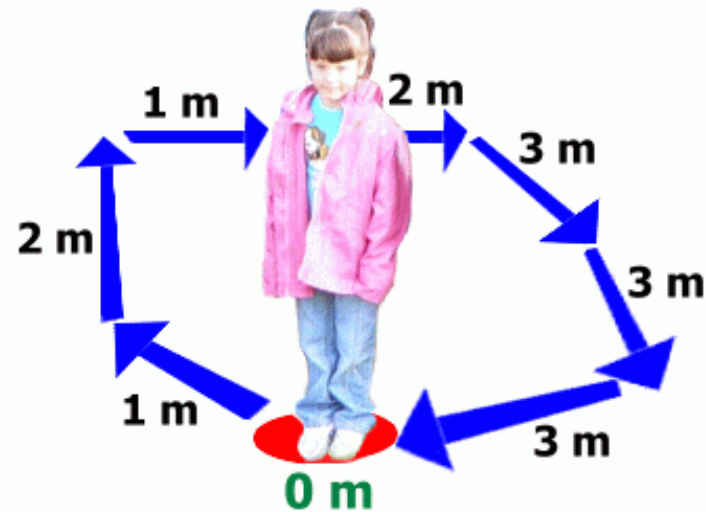
- It took Pete 10 minutes to bike 4 blocks to his friends house. What was his speed?



Speed and Velocity

Average Speed

- the TOTAL distance traveled divided by the TOTAL time
- Balances out fast and slow periods of motion during a trip



Speed and Velocity

Examples

James ran his first 400 meter lap in 70 seconds. His second lap took him 72 seconds. His third lap was 73 seconds. James completed his fourth lap in 69 seconds. Find his average speed in m/s.



Speed and Velocity

Velocity



- Measures a change in position over a period of time AND in a certain direction
- Uses the SAME formula as speed
- Ex: A plane traveling from Los Angeles to Atlanta is traveling 2000 miles in 4 hours, what is its velocity?

Speed and Velocity

Review:



- Can speed be negative? Why or why not?
- If you had the formula $S = D/T$, how would you rewrite it to solve for distance?
- When is a time you would need to find the average speed?
- What is the difference between measuring speed and measuring velocity?

Speed and Velocity

Practice:



- Roll a ball along the table and record the time and distance
- Calculate the speed
- Roll a ball and record the time it takes to roll 30 cm
- Calculate the speed
- Roll a ball for 5 seconds along the table and measure the distance it traveled
- Calculate the speed