Formula Challenge

What do the following units represent? Use D for distance, T for time, S for speed, or A for acceleration.

1. 14 km  4. 6 hours  7. 14 mi 10. 1.4 m
2. 30 m/s  5. 12 cm/s²  8. 3.2 sec  11. 6 cm/min/sec
3. 34 min  6. 150 mph  9. 25 ft  12. 3 km/hr/sec

Solve each problem! Be sure to show your work!

13. Goldie Goldfish, a speed swimmer, loves to race around the park’s pond, which is 0.5 miles around. If she can swim 20 laps around the track in 2 hours, what is her average speed?

14. It takes Stu, a slimy slug, 20 minutes to travel from his favorite bush to the local trash can (a trip of 30 meters), how far can he travel in 1 hour (60 minutes)?

15. At exactly 2:00 pm, Speedy the Snail crawls onto a meter stick at the 10 cm mark. If he reaches the 65 cm mark at exactly 2:10 pm, what is his speed?

16. If it takes Leaping Louie 5 minutes to jump 3 blocks, how long will it take for him to jump 15 blocks?

17. If Bert the Bat travels eastward at 40 mph with a tail wind of 6 mph, what is his actual speed?

18. Toon Train is traveling at the speed of 10 m/s at the top of a hill. Five seconds later it reaches the bottom of the hill and is moving at 30 m/s. What is the rate of acceleration of Toon Train?

19. Pete the Penguin loves to sled down his favorite hill. If he hits a speed of 50 m/s after 5 seconds, what is his rate of acceleration? Hint: He starts at 0 m/s at the top of the hill.

20. Monster Mike’s truck decelerates from 72 m/s to 0 m/s in 6 seconds. What is his rate of deceleration?

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Formula Challenge Answer Key

D 1. 14 km  T 4. 6 hours  D 7. 14 mi  D 10. 1.4 m
S 2. 30 m/s  A 5. 12 cm/s²  T 8. 3.2 sec  A 11. 6 cm/min/sec
T 3. 34 min  S 6. 150 mph  D 9. 25 ft  A 12. 3 km/hr/sec

Solve each problem! Be sure to show your work!

13. Goldie Goldfish, a speed swimmer, loves to race around the park’s pond, which is 0.5 miles around. If she can swim 20 laps around the track in 2 hours, what is her average speed?

\[ 20 \times 0.5 = 10 \text{ miles} \div 2 \text{ hours} = 5 \text{ mph} \]

14. It takes Stu, a slimy slug, 20 minutes to travel from his favorite bush to the local trash can (a trip of 30 meters), how far can he travel in 1 hour (60 minutes)?

\[ 30 \div 20 = 1.5 \text{ m/min} \times 60 \text{ min} = 90 \text{ m} \]

15. At exactly 2:00 pm, Speedy the Snail crawls onto a meter stick at the 10 cm mark. If he reaches the 65 cm mark at exactly 2:10 pm, what is his speed?

\[ 65 \text{ cm} - 10 \text{ cm} = 55 \text{ cm} \div 10 \text{ min} = 5.5 \text{ cm/min} \]

16. If it takes Leaping Louie 5 minutes to jump 3 blocks, how long will it take for him to jump 15 blocks?

\[ 3 \text{ blocks} \div 5 \text{ min} = 0.6 \text{ blocks/min} \quad 15 \text{ blocks} \div 0.6 \text{ blocks/min} = 25 \text{ min} \]

17. If Bert the Bat travels eastward at 40 mph with a tail wind of 6 mph, what is his actual speed?

\[ 40 \text{ mph} + 6 \text{ mph} = 46 \text{ mph} \]

18. Toon Train is traveling at the speed of 10 m/s at the top of a hill. Five seconds later it reaches the bottom of the hill and is moving at 30 m/s. What is the rate of acceleration of Toon Train?

\[ 30 \text{ m/s} - 10 \text{ m/s} = 20 \text{ m/s} \div 5 \text{ s} = 4 \text{ m/s}^2 \]

19. Pete the Penguin loves to sled down his favorite hill. If he hits a speed of 50 m/s after 5 seconds, what is his rate of acceleration? Hint: He starts at 0 m/s at the top of the hill.

\[ 50 \text{ m/s} - 0 \text{ m/s} = 50 \text{ m/s} \div 5 \text{ s} = 10 \text{ m/s}^2 \]

20. Monster Mike’s truck decelerates from 72 m/s to 0 m/s in 6 seconds. What is his rate of deceleration?

\[ 0 \text{ m/s} - 72 \text{ m/s} = - 72 \text{ m/s} \div 6 \text{ s} = -12 \text{ m/s}^2 \]