



## **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/s <sup>2</sup> _____ | 8. 3.2 sec _____ | 11. 6cm/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?

*T. Trimpe 2002*

*<http://sciencespot.net/>*

### 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/s<sup>2</sup> **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?

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