

Linear Motion Word Problems

Problem: You must show your work to receive credit.

Average speed $v = \frac{d}{t}$ acceleration $a = \frac{\Delta v}{t}$

Linear motion $v = v_0 + at$ $d = \frac{1}{2}at^2$

Falling objects $v = v_0 + gt$ $d = \frac{1}{2}gt^2$ $t = \sqrt{\frac{2d}{g}}$

1. What is the average speed of a cheetah that runs 88 m in 5 seconds?
2. What is the average speed of a cheetah that runs 67 m in 6 seconds?
3. A bicycle travels 15 km in 30 minutes. What is its average speed?
4. A bicycle travels 10 km in 30 minutes. What is its average speed?
5. What is the average acceleration of a car that goes from rest to 60 km/h in 8 seconds?

Name: _____

ID: A

6. What is the average acceleration of a car that goes from rest to 50 km/h in 7 seconds?
7. A jet on an aircraft carrier can be launched from 0 to 40 m/s in 2 seconds. What is the acceleration of the jet?
8. A jet on an aircraft carrier can be launched from 0 to 51 m/s in 3 seconds. What is the acceleration of the jet?
9. A skateboarder starting from rest accelerates down a ramp at 2 m/s^2 for 2 s. What is the final speed of the skateboarder?
10. A skateboarder starting from rest accelerates down a ramp at 5 m/s^2 for 2 s. What is the final speed of the skateboarder?
11. An apple falls from a tree and 0.5 second later hits the ground. How fast is the apple falling when it hits the ground?
12. A peach falls from a tree and 0.5 second later hits the ground. How fast is the peach falling when it hits the ground?
13. What speed must you toss a ball straight up so that it takes 4 s to return to you?
14. What speed must you toss a ball straight up so that it takes 6 s to return to you?

Name: _____

ID: A

15. You toss a ball at 5 m/s straight upward. How much time will the ball take to reach the top of its path?

16. You toss a ball at 30 m/s straight upward. How much time will the ball take to reach the top of its path?

17. A crate falls from an airplane flying horizontally at an altitude of 1250 m. Neglecting air drag, how long will the crate take to strike the ground?

18. A crate falls from an airplane flying horizontally at an altitude of 2000 m. Neglecting air drag, how long will the crate take to strike the ground?

19. A stone is dropped from a cliff. After it has fallen 10 m, what is the stone's velocity?

20. A stone is dropped from a cliff. After it has fallen 15 m, what is the stone's velocity?

Linear Motion Word Problems Answer Section

PROBLEM

- | | | | |
|-----|-----------------------------|-----------------------------|------------------|
| 1. | ANS:
17.6 m/s | | |
| | PTS: 1 | KEY: average speed | BLM: application |
| 2. | ANS:
11.2 m/s | | |
| | PTS: 1 | KEY: average speed | BLM: application |
| 3. | ANS:
30 km/hr | | |
| | PTS: 1 | KEY: average speed | BLM: application |
| 4. | ANS:
20 km/hr | | |
| | PTS: 1 | KEY: average speed | BLM: application |
| 5. | ANS:
7.5 km/h·s | | |
| | PTS: 1 | KEY: average acceleration | BLM: application |
| 6. | ANS:
7.1 km/h·s | | |
| | PTS: 1 | KEY: average acceleration | BLM: application |
| 7. | ANS:
20 m/s ² | | |
| | PTS: 1 | KEY: acceleration | BLM: application |
| 8. | ANS:
17 m/s ² | | |
| | PTS: 1 | KEY: acceleration | BLM: application |
| 9. | ANS:
4 m/s | | |
| | PTS: 1 | KEY: acceleration speed | BLM: application |
| 10. | ANS:
10 m/s | | |
| | PTS: 1 | KEY: acceleration speed | BLM: application |

11. ANS:
5 m/s
- PTS: 1 KEY: acceleration | speed BLM: application
12. ANS:
5 m/s
- PTS: 1 KEY: acceleration | speed BLM: application
13. ANS:
20 m/s
- PTS: 1 KEY: acceleration | speed BLM: application
14. ANS:
30 m/s
- PTS: 1 KEY: speed | acceleration BLM: application
15. ANS:
0.5 s
- PTS: 1 KEY: speed | acceleration BLM: application
16. ANS:
3 s
- PTS: 1 KEY: acceleration | speed BLM: application
17. ANS:
15.8 s
- PTS: 1 KEY: acceleration | speed BLM: application
18. ANS:
20 s
- PTS: 1 KEY: gravity | acceleration BLM: application
19. ANS:
14 m/s
- PTS: 1 KEY: gravity | acceleration BLM: application
20. ANS:
17 m/s
- PTS: 1 KEY: velocity | gravity BLM: application