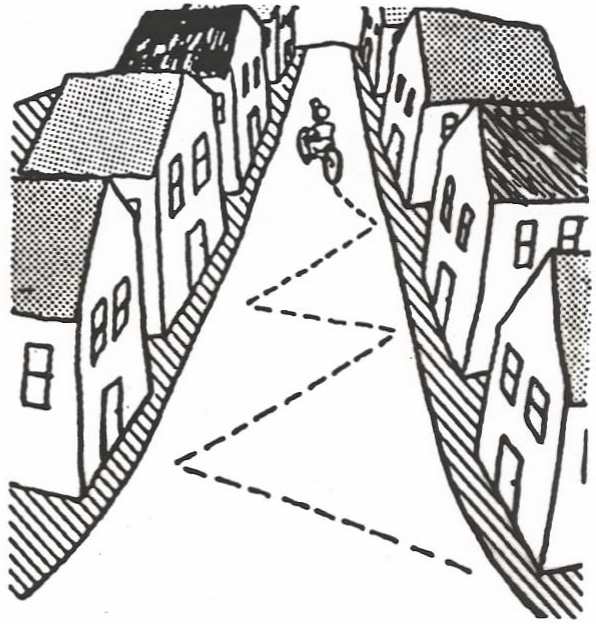
Q 11.

QUESTION Suppose this block is 300 feet long, and quite steep. If I ride my bicycle up the hill along the zigzag path shown, which is 600 feet long, the average force I must exert is:

1. 1/4
2. 1/3
3. 1/2
4. equal to
5. impossible to determine



the average force that I would exert going straight up.

Q 12.

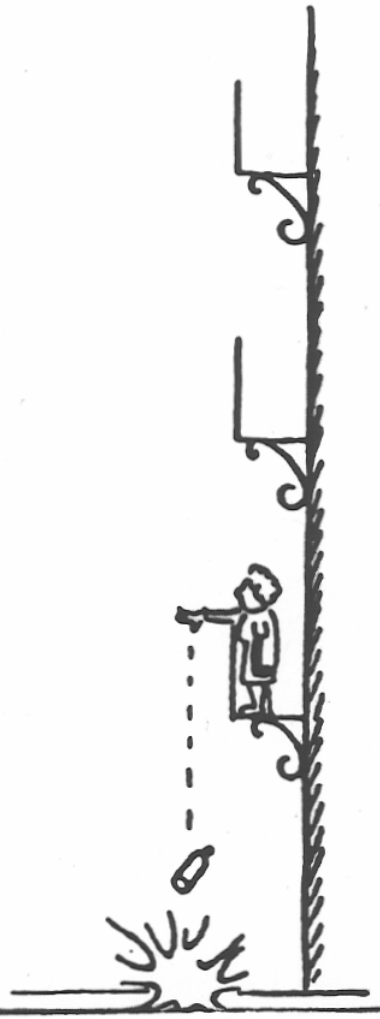
A spring-loaded toy dart gun is used to shoot a dart straight up in the air, and the dart reaches a maximum height of 24 m. The same dart is shot straight up a second time from the same gun, but this time the spring is compressed only half as far before firing. How far up does the dart go this time, neglecting friction and assuming an ideal spring?

1. 96 m
2. 48 m
3. 24 m
4. 12 m
5. 6 m
6. 3 m
7. impossible to determine

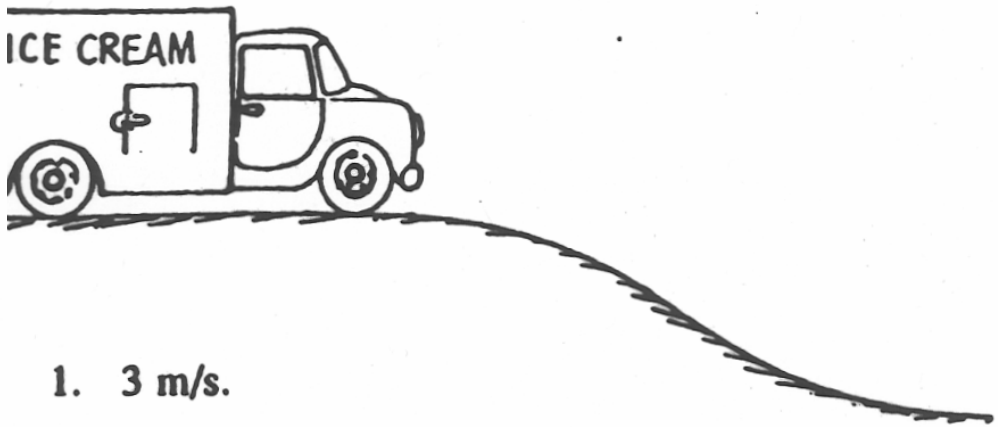
Q 13.

QUESTION A bottle dropped from a balcony strikes the sidewalk with a particular speed. To double the speed of impact you would have to drop the bottle from a balcony that is

1. twice as high
2. three times as high
3. four times as high
4. five times as high
5. six times as high
6. eight times as high
7. impossible to determine



Q 14. **QUESTION:** A truck initially at rest at the top of a hill is allowed to roll down without friction. At the bottom its speed is 4 m/s. Next, the truck is again rolled down the hill without friction, but this time it does not start from rest. It has an initial speed of 3 m/s on top, even before it starts going down the hill. How fast is it going when it gets to the bottom?



1. 3 m/s.
2. 4 m/s.
3. 5 m/s.
4. 6 m/s.
5. 7 m/s.

Q 15.

A person standing at the edge of a cliff throws one ball straight up and another ball straight down at the same initial speed. Neglecting air resistance, the ball to hit the ground below the cliff with the greater speed is the one initially thrown

1. upward.
2. downward.
3. neither—they both hit at the same speed.

Answers

Q11. 3
Q12. 5
Q13. 3
Q14. 3
Q15. 3