

Worksheet on Stopping distance

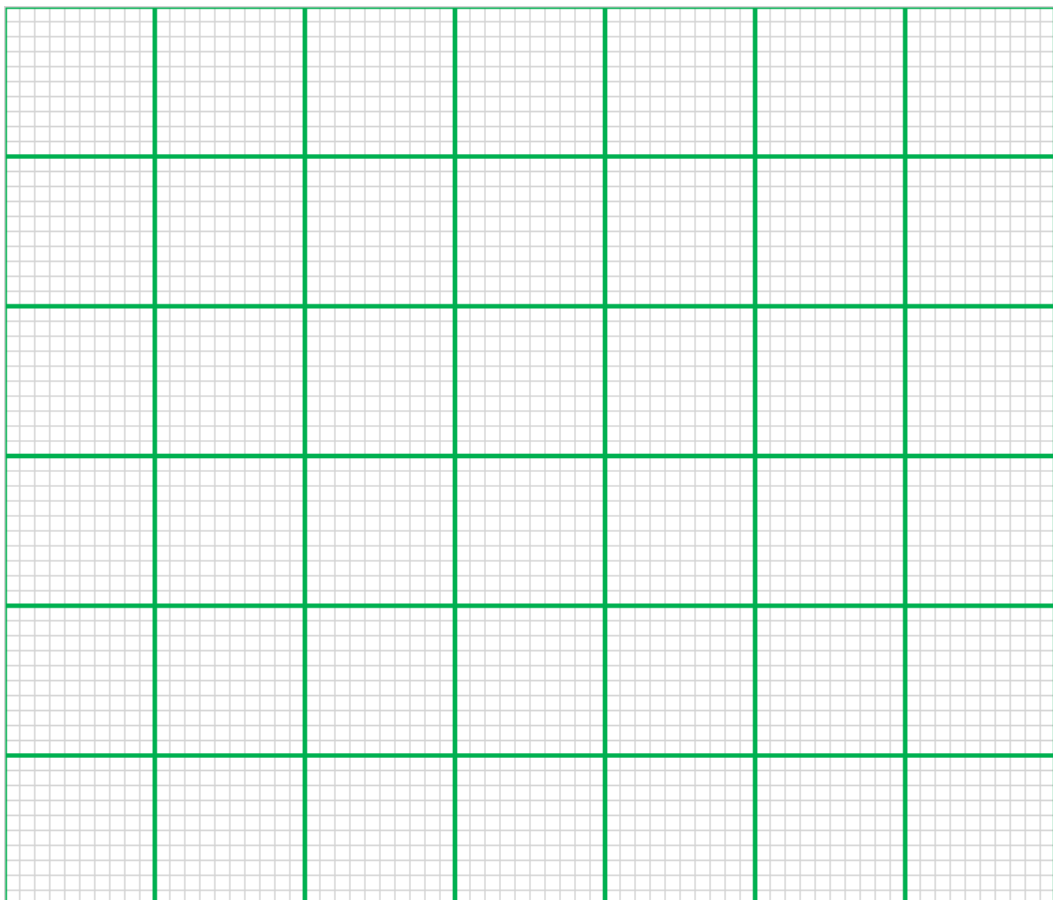
Name: **Class:** **Date:**

I Complete each sentence using the appropriate word(s).

1. A car's stopping distance is the sum of and
.....
2. The time taken by the driver to react and press the brake pedal is called
.....
3. In an emergency, the distance travelled by a vehicle before the brakes are applied is called
4. In an emergency, the distance travelled by a vehicle after the brakes are applied is called
5. Stopping distance is increased if the road is or

II Answer the following questions.

1. A car is travelling at a speed of 28 m/s at $t = 0$ s. Suddenly, the driver sees a child crossing the road at 100m and decides to do an emergency stop. The driver's reaction time is 0.8 s. After the brakes are applied, the car comes to rest 5s later.
a) Use the graph given below to plot a speed – time graph for the above situation.



b) Use your graph to calculate

i) the thinking distance.

thinking distance =

ii) the deceleration of the car as it brakes.

deceleration =

iii) the braking distance

braking distance =

iv) the stopping distance

stopping distance =

c) Using the value calculated in b iv), state and explain if child will be safe.

.....
.....

d) List any three factors affecting i) thinking distance and ii) braking distance.

i) Thinking distance

- 1.....
- 2.....
- 3.....

ii) braking distance

- 1.....
- 2.....
- 3.....

Answers

Worksheet on Stopping distance

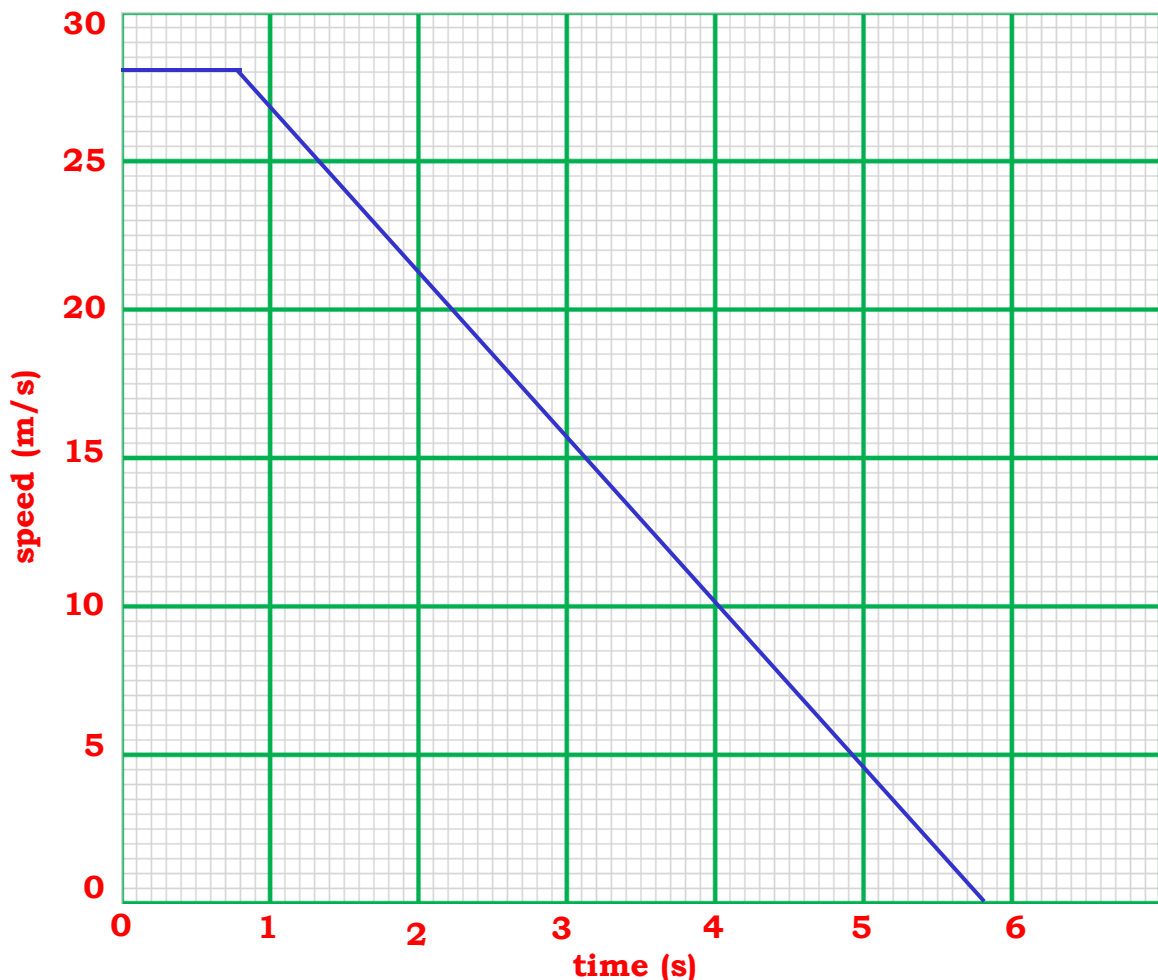
Name: **Answers** Class: Date:

I Complete each sentence using the appropriate word(s).

1. A car's stopping distance is the sum of **thinking distance** and **braking distance**
2. The time taken by the driver to react and press the brake pedal is called **reaction time**
3. In an emergency, the distance travelled by a vehicle before the brakes are applied is called **thinking distance**
4. In an emergency, the distance travelled by a vehicle after the brakes are applied is called **braking distance**
5. Stopping distance is increased if the road is **wet** or **icy**

II Answer the following questions.

1. A car is travelling at a speed of 28 m/s at $t = 0$ s. Suddenly, the driver sees a child crossing the road at 100m and decides to do an emergency stop. The driver's reaction time is 0.8 s. After the brakes are applied, the car comes to rest 5s later.
a) Use the graph given below to plot a speed – time graph for the above situation.

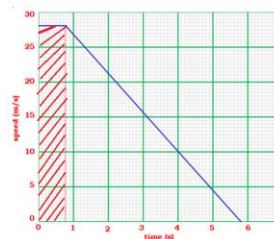


b) Use your graph to calculate

i) the thinking distance.

distance = area under the curve

distance = 28 m/s \times 0.8 s = 22.4 m



thinking distance = **22.4 m**

ii) the deceleration of the car as it brakes.

deceleration = gradient

= (28 - 0) \div (5.8 - 0.8)

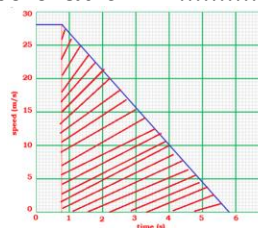
= 5.6 m/s²

deceleration = **5.6 m/s²**

iii) the braking distance

distance = area under the slope

= 0.5 \times 5 \times 28 = 70 m



braking distance = **70 m**

iv) the stopping distance

stopping distance = thinking distance + braking distance

= 22.4 m + 70 m = 92.4 m

stopping distance = **92.4 m**

c) Using the value calculated in b iv), state and explain if child will be safe.

Yes! The child will be safe. Because the stopping distance is 92.4 m.,

Vehicle will be stopped at, 100 m - 92.4 m = 7.6 m ahead

d) List any three factors affecting i) thinking distance and ii) braking distance.

i) Thinking distance

1... **greater speed**

2... **tired/ alcohol**

3... **distraction**

ii) braking distance

1... **greater speed**

2... **wet or icy road**

3... **poor car conditions like bald tyres, poor brakes etc.,**