

*Rate of
Change
and
Slope*

The table shows the total distance a car travelled over various time interval

Time (h)	Distance (km)
1	68
2.5	170
3	204
4.5	306
5	340

km

Time (h)	Distance (km)
1	68
2.5	170
3	204
4.5	306
5	340

400

300

200

100

1

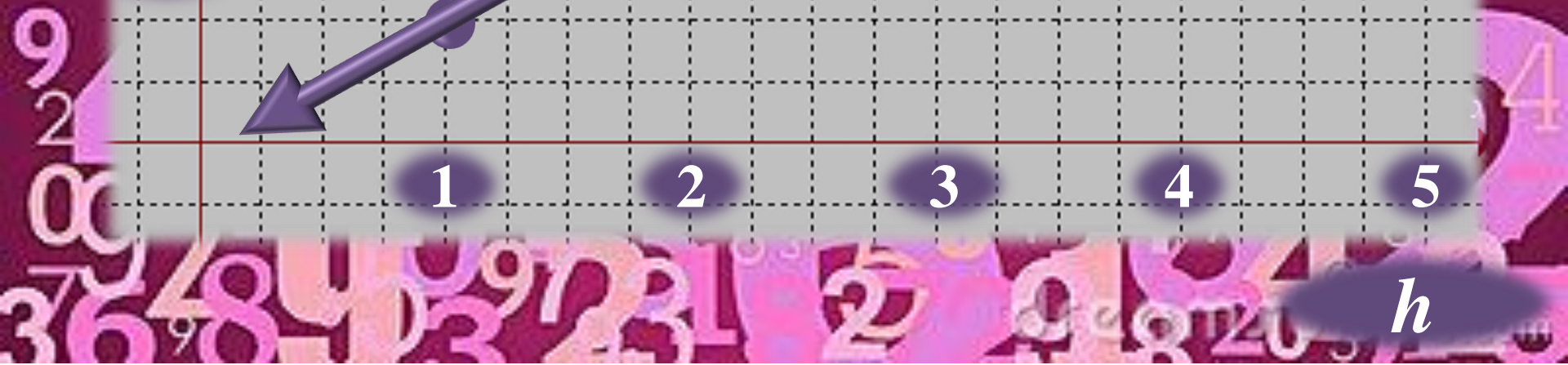
2

3

4

5

h



km

400

300

200

100

1

2

3

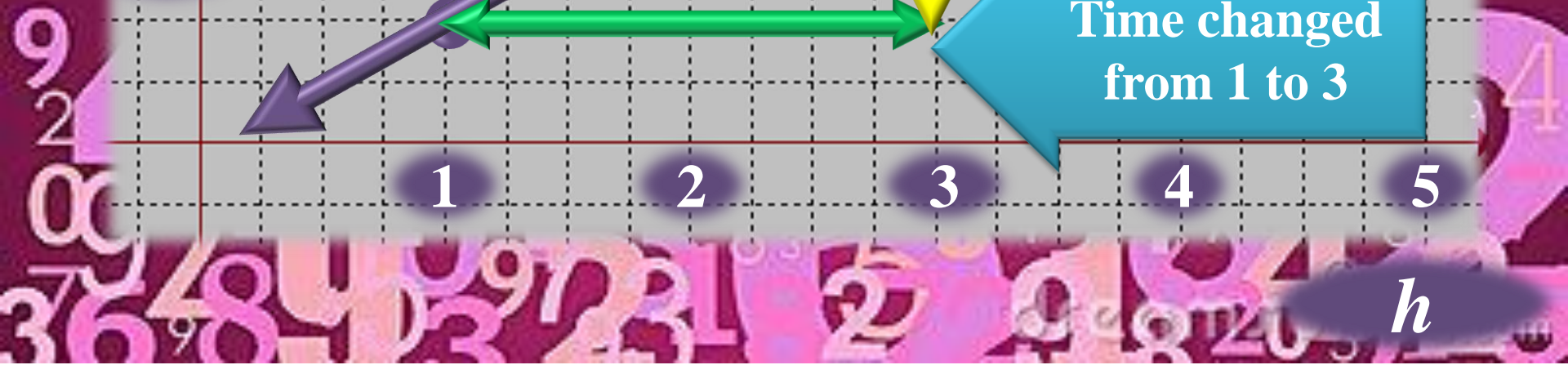
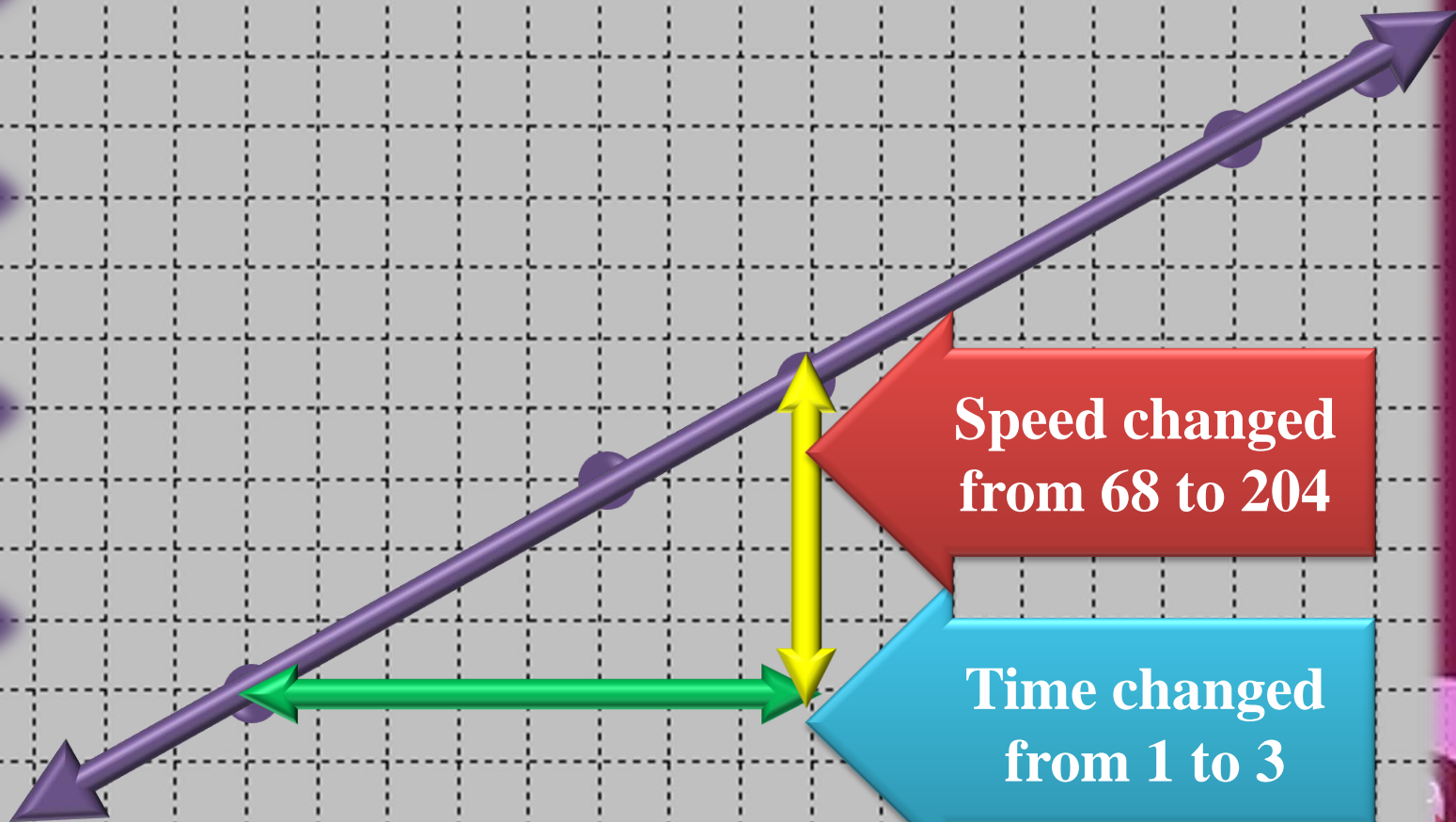
4

5

h

Speed changed
from 68 to 204

Time changed
from 1 to 3



km

The car is speeding in a

rate of

$$\frac{204 - 68}{3 - 1} = \frac{136}{2}$$

400

300

200

100

1

2

3

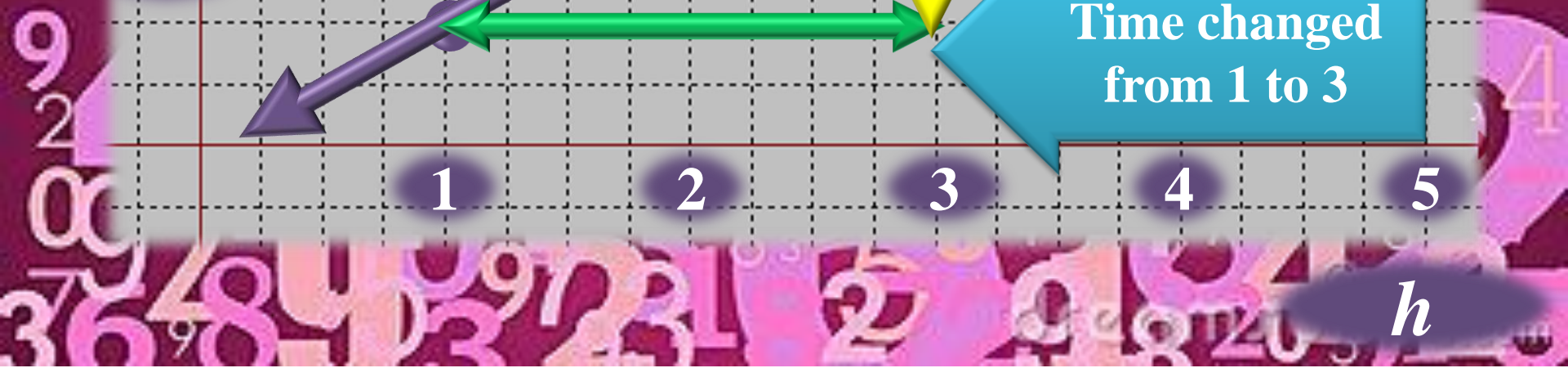
4

5

Speed changed
from 68 to 204

Time changed
from 1 to 3

h



km

The car is speeding in a
rate of
68 km/h

400

300

200

100

1

2

3

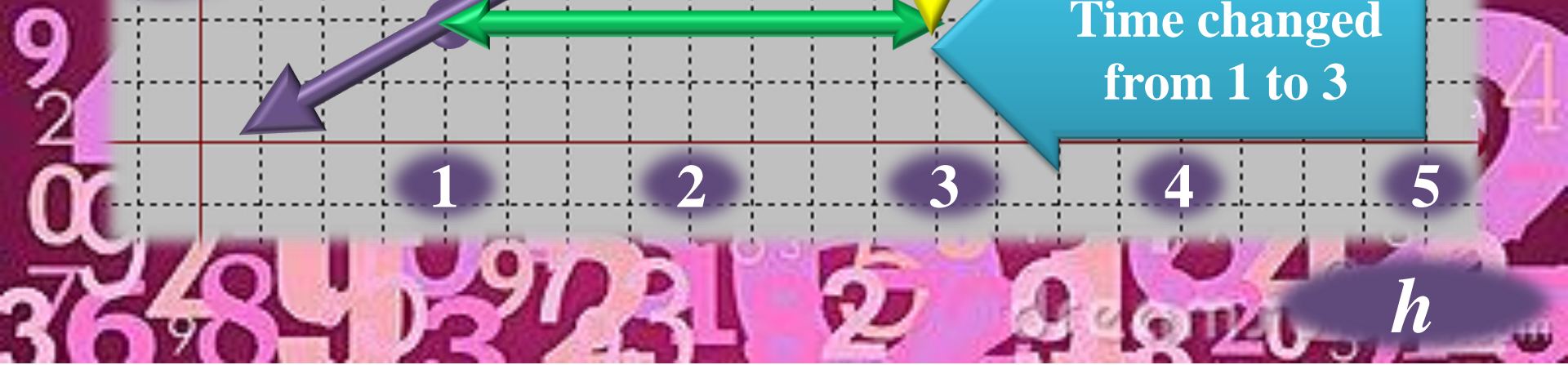
4

5

Speed changed
from 68 to 204

Time changed
from 1 to 3

h



km

$$\text{Rate of change} = \frac{\text{change in } y}{\text{change in } x}$$

400

300

200

100

1

2

3

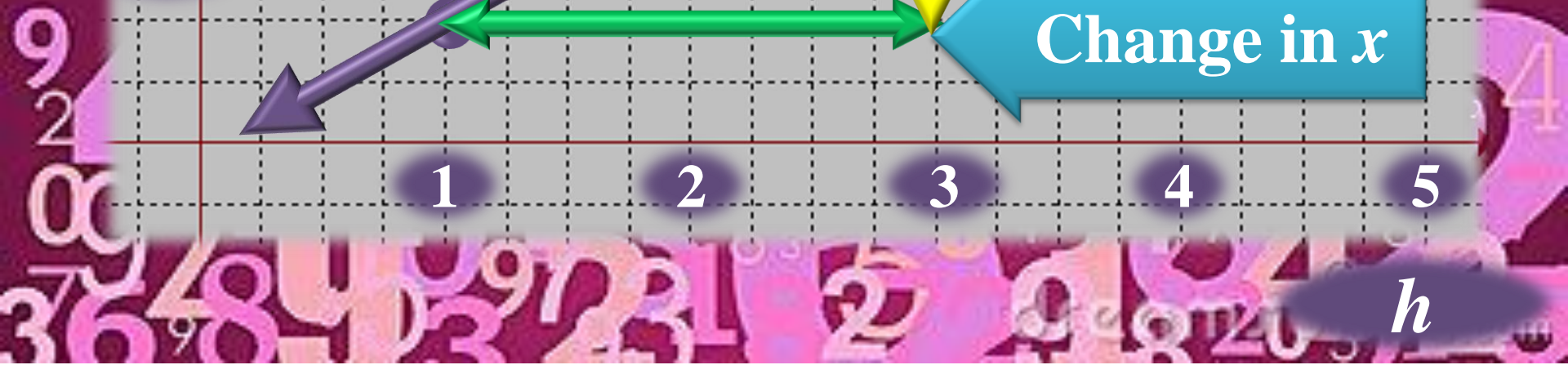
4

5

Change in *y*

Change in *x*

h



km

Rate of change

$$= \frac{\Delta y}{\Delta x}$$

400

300

200

100

1

2

3

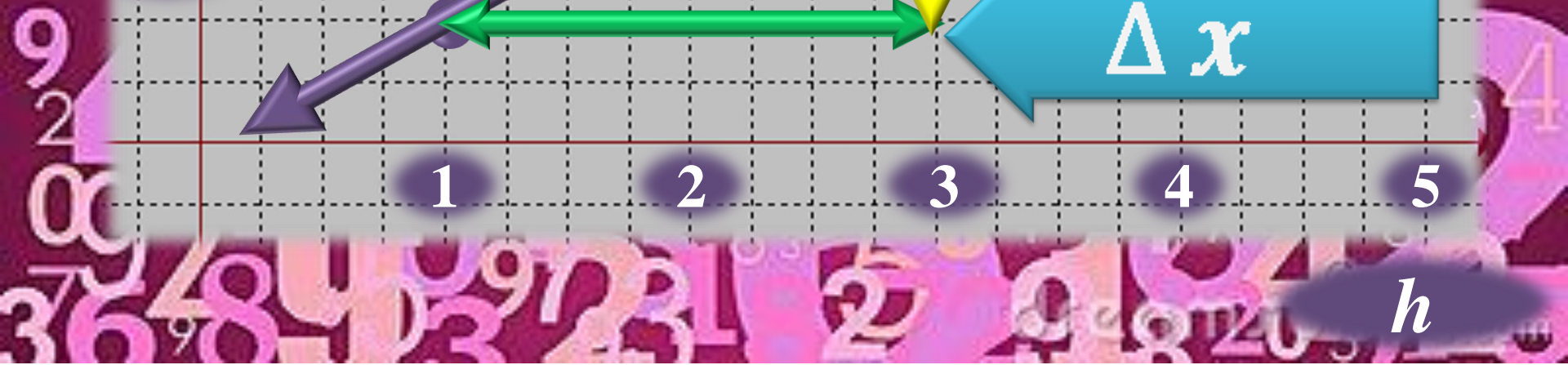
4

5

h

Δy

Δx



Rate of change
of a line

The Slope (m)

Use any two
points

12

9

6

3

2

4

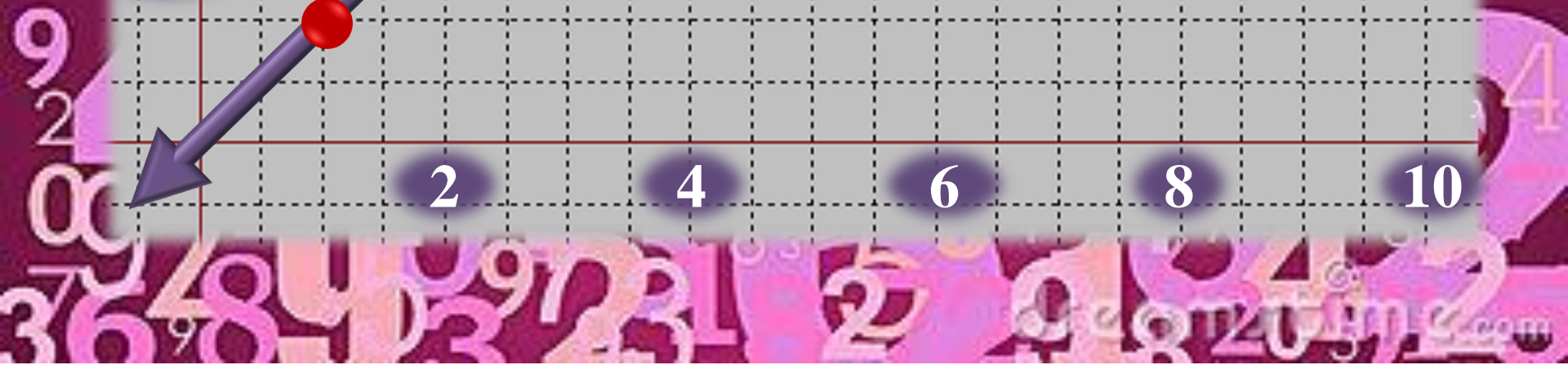
6

8

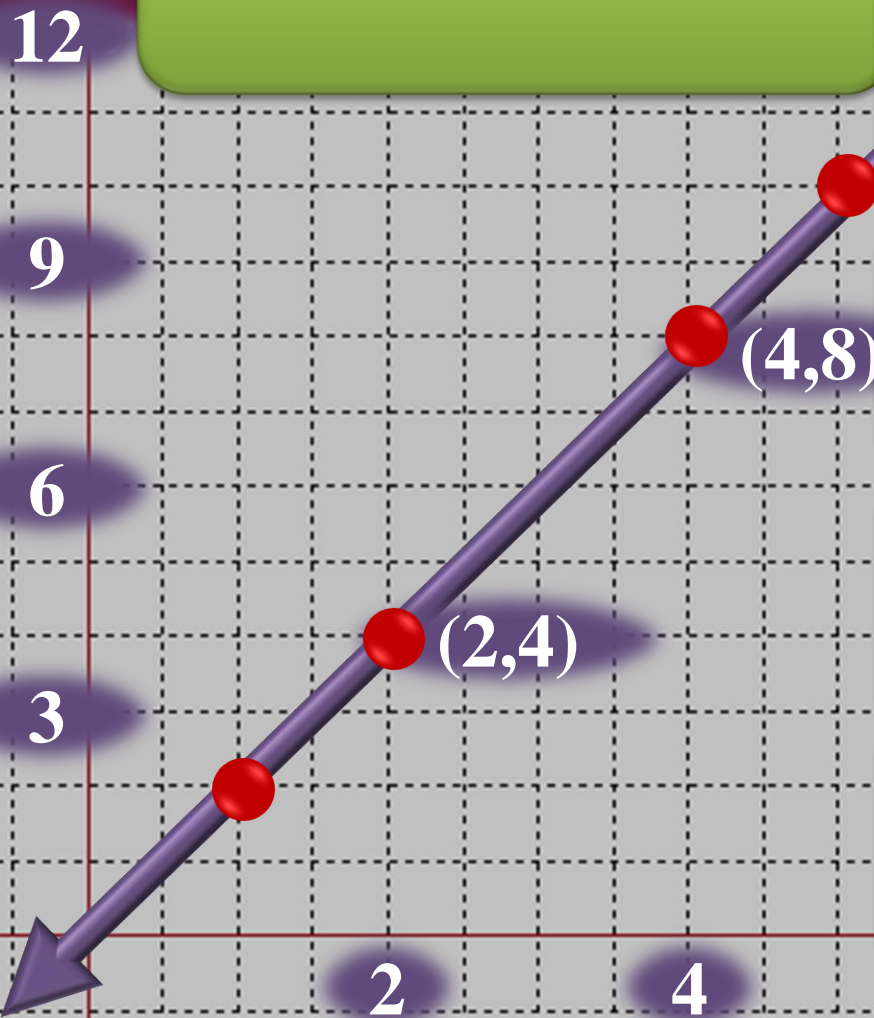
10

(4,8)

(2,4)



The Slope (m)



$$\text{slope} = \frac{\Delta y}{\Delta x}$$

$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

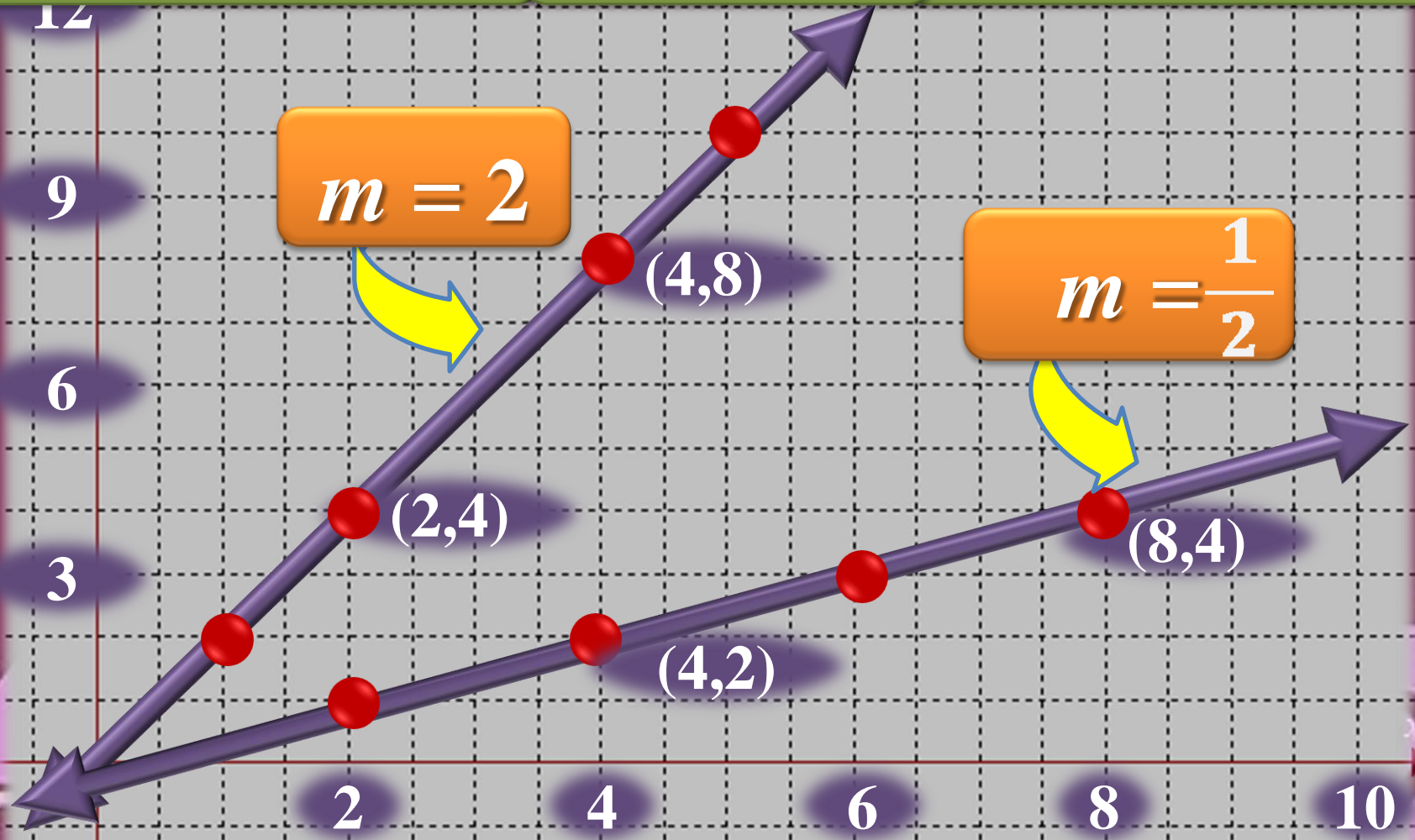
$$\text{slope} = \frac{8 - 4}{4 - 2}$$

$$\text{slope} = \frac{4}{2} = 2$$

Slope of a line

Measures

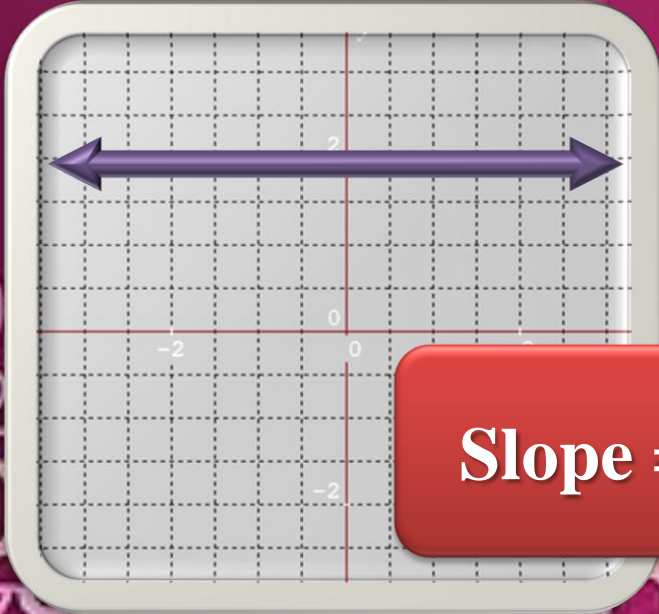
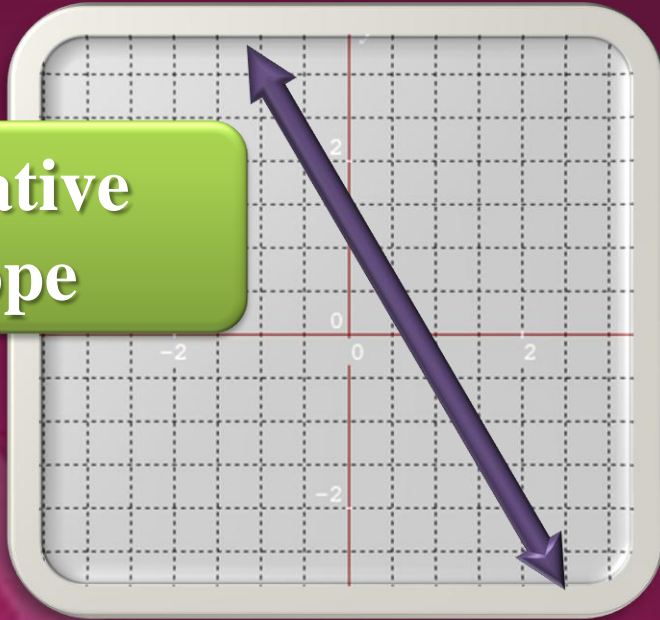
its steepness





Positive Slope

Negative Slope



Slope = zero

Slope is undefined

