Year 9 Class 10 questions

Q1

Complete the table of values.

$y = \frac{2}{x}$

x	-2	-1	$-\frac{1}{2}$	0	$\frac{1}{2}$	1	2
y				×			
	-1	-2	-4		4	2	1

Q2

Complete the table of values.

$y = -x^3 + 2$

x	-3	-2	-1	0	1	2	3
y							
	29	10	3	2	1	-6	-25

Q3

Mila is paid $12 per hour for her part time job. What is this in cents/min?

[ ] cents/min

20

Q4

A spaceship flies at a speed of 1.5 km/sec. What is this speed in km/h?

[ ] km/h

5400

Q5

D is directly proportional to the square of t.
$D = 100$, when $t = 5$.

Find the formula for D in terms of t.

- ○ $D = 4t^2$
- ○ $D = 4\sqrt{(t)}$
- ○ $D = \frac{4}{t^2}$
- ○ $D = \frac{t^2}{4}$

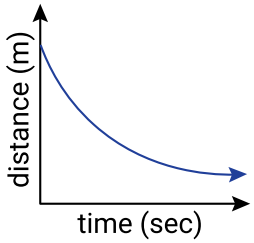
Find the value of D when $t = 8$.

$D =$ [ ]

256

Q6

Describe the distance shown in the graph.



The distance is [ ] at a [ ] rate.

decreasing

decreasing

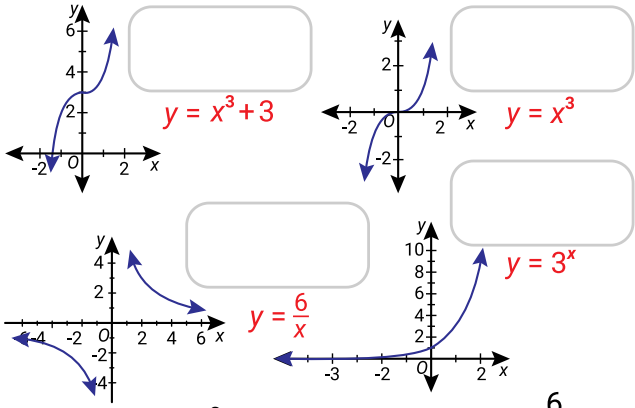
increasing

decreasing

constant

Q7

Match the graphs with their equations.



[ ]

[ ]

[ ]

[ ]

$y = x^3$

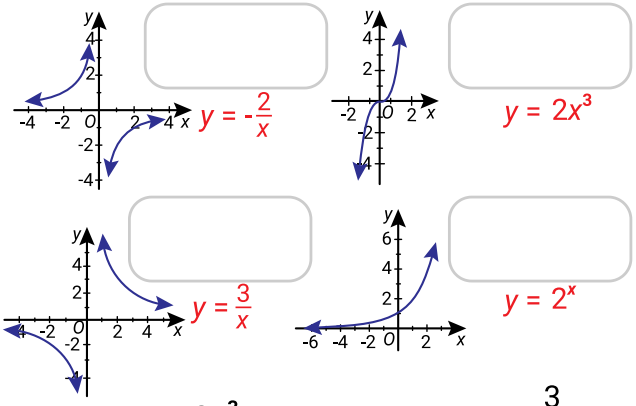
$y = \frac{6}{x}$

$y = 3^x$

$y = x^3 + 3$

Q8

Match the graphs with their equations.



$y = 2x^3$

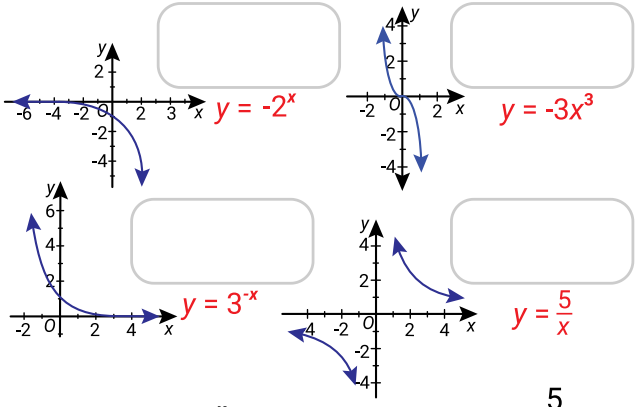
$y = \frac{3}{x}$

$y = 2^x$

$y = -\frac{2}{x}$

Q9

Match the graphs with their equations.



$y = 3^{-x}$

$y = \frac{5}{x}$

$y = -2^x$

$y = -3x^3$

Q10

Complete the conversion.

6 cm/sec = [ ] m/min

3.6

Q11

Complete the conversion.

6 cm/sec = [ ] m/h

216

Q12

A snail is crawling at a speed of 4 mm/s. What is this speed in m/h?

[ ] m/h

14.4

Q13

The mass of a substance is directly proportional to the volume. The mass of 2 cups of the substance is 250 grams. What is the mass of 5 cups?

[ ] grams

625

Q14

The cost of frozen yoghurt is directly proportional to the volume. 120 mL of yogurt cost $6. How much would 100 mL cost?

$ [ ]

5

Q15

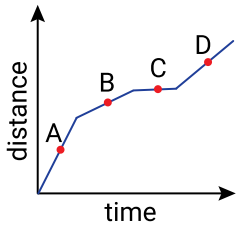
At a library the cost of photocopying varies directly as the number of pages copied. Caleb is charged $3.40 to copy 850 pages. How much will Caleb be charged for 685 pages?

$ [ ]

2.74

Q16

Consider the distance-time graph of Mason's bushwalk.



When was Mason moving fastest?

- (●) A
- ( ) B
- ( ) C
- ( ) D

When was Mason stationary?

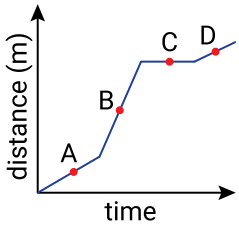
- ( ) A
- ( ) B
- (●) C
- ( ) D

Was Mason moving faster at A or D?

- (●) A
- ( ) D

Q17

Consider the distance-time graph of Isabella's walk to the shops.



When was Isabella moving fastest?

- ( ) A
- (●) B
- ( ) C
- ( ) D

When was Isabella stationary?

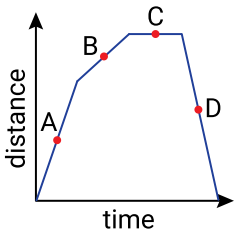
- ( ) A
- ( ) B
- (●) C
- ( ) D

Was Isabella moving faster at B or D?

- (●) B
- ( ) D

Q18

Consider the distance-time graph of Zoe's bushwalk.



When was Zoe walking back to her start point?

- ( ) A
- ( ) B
- ( ) C
- (●) D

When was Zoe stationary?

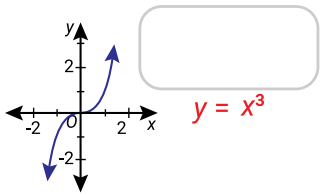
- ( ) A
- ( ) B
- (●) C
- ( ) D

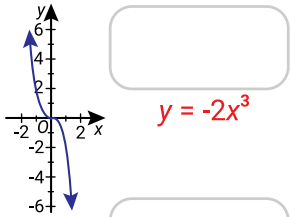
Was Zoe moving faster at A or B?

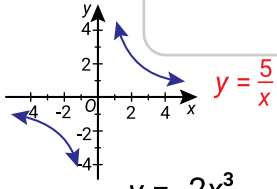
- (●) A
- ( ) B

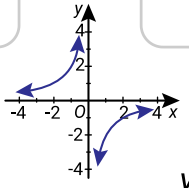
Q19

Match the graphs with their equations.









$y = -2x^3$

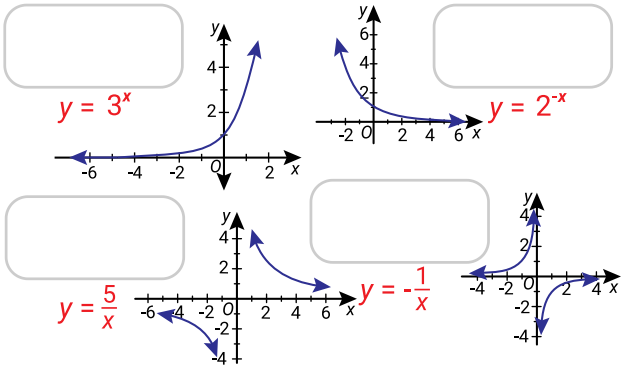
$y = \frac{5}{x}$

$y = x^3$

$y = -\frac{2}{x}$

Q20

Match the graphs with their equations.



$y = -\frac{1}{x}$

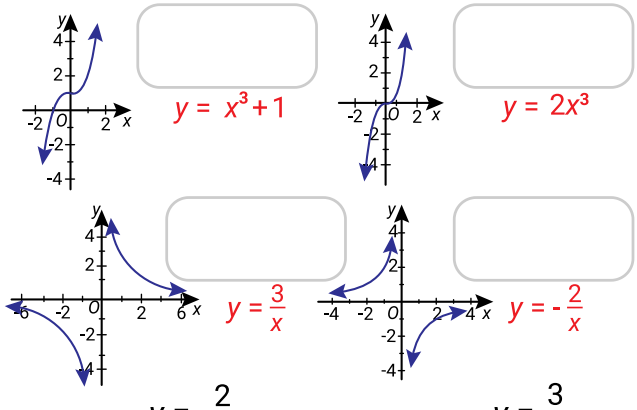
$y = \frac{5}{x}$

$y = 3^x$

$y = 2^{-x}$

Q21

Match the graphs with their equations.



$y = -\frac{2}{x}$

$y = \frac{3}{x}$

$y = 2x^3$

$y = x^3 + 1$

Q22

Complete the conversion.

4 mm/sec = [ ] m/h

14.4

Q23

Complete the conversion.

7 m/sec = [ ] km/year

220 752

Q24

Complete the conversion. (Ans. to 1 d.p.)

24 L/hour = [ ] mL/s

6.7

Q25

The distance covered by a train travelling at a constant speed is directly proportional to the time spent travelling. If the train goes 30 km in 40 minutes how far will it go in 4 hours?

[ ] km

180

Q26

The mass of a substance varies directly as its volume. 3 L of the substance has a mass of 4.5 kg. What is the mass of 250 mL of the substance?

[ ] grams

375

Q27

The force (F) of a mass is directly proportional to the acceleration (a) of the mass. When $A = 25$, $F = 1500$.

Write a formula for F in terms of a.

$F =$ [ ]

$60a$

Find F when $a = 130$.

[ ]

7800

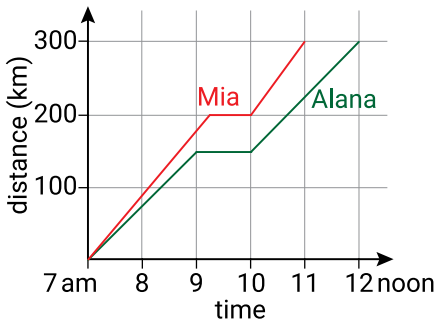
Find a when $F = 1200$.

[ ]

20

Q28

The graph shows the journeys of Mia and Alana from Town A to Town B.



Who completes the trip in the shortest time?

Alana → Mia

At 10 am does Mia increase or decrease her speed?

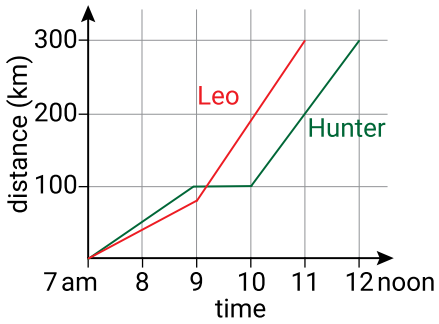
→ increase decrease

How far from Town A is Mia when she stops to rest?

[ ] km 200 km

Q29

The graph shows the journeys of Leo and Hunter from Town A to Town B.



Who takes the longest time to complete the trip?

→ Hunter Leo

At 9 am does Leo increase or decrease her speed?

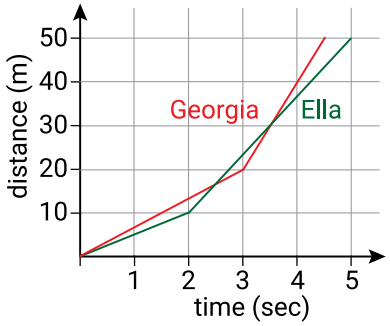
decrease → increase

How far from Town A is Hunter when he stops to rest?

[ ] km 100 km

Q30

The graph shows a race between Georgia and Ella.



Who takes the longest time to complete the race?

Georgia → Ella

After 3 seconds does Georgia increase or decrease her speed?

→ increase decrease

How far from the start is Ella after 2 seconds?

[ ] metres 10 metres