

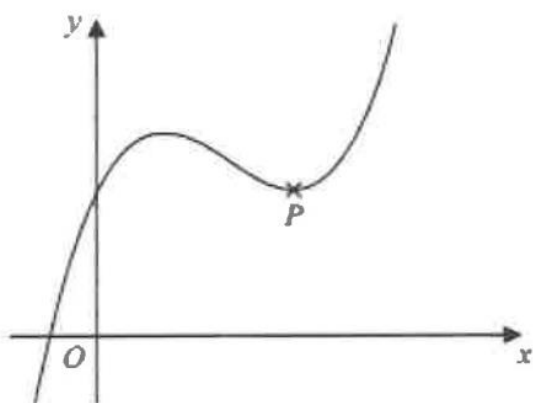
Monster Questions – Set 5

Question 1

$$y = x^3 - 4x^2 + 4x + 3$$

- (a) Find $\frac{dy}{dx}$

(2)



The diagram shows a sketch of the curve with equation $y = x^3 - 4x^2 + 4x + 3$
The point P is a turning point on the curve.

- (b) Work out the coordinates of P .
Show clear algebraic working.

(4)

- (c) Write down the range of values of x for which the curve has a negative gradient.

Question 2

P is directly proportional to q^3
 $P = 270$ when $q = 7.5$

(a) Find a formula for P in terms of q

(3)

(b) Work out the positive value of q when $P = q$

Question 3

Gemma has 9 counters.
Each counter has a number on it.



Gemma puts the 9 counters into a bag.
She takes at random a counter from the bag and does not replace the counter.
She then takes at random a second counter from the bag.

(a) Work out the probability that the number on each counter is an even number.

(2)

(b) Work out the probability that the number on the first counter added to the number on the second counter gives an odd number.

Question 4

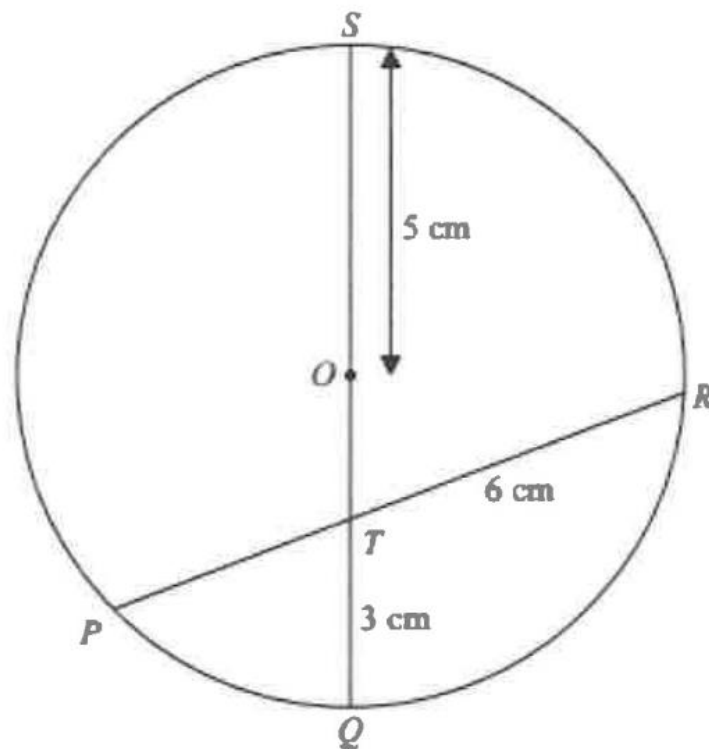


Diagram NOT
accurately drawn

P , Q , R and S are points on a circle, centre O .

QS is a diameter of the circle.

QS and PR intersect at the point T .

$OS = 5$ cm, $QT = 3$ cm and $TR = 6$ cm.

Work out the length of PT .

Question 5

Here are 7 cards.
Each card has a number on it.



Harry takes at random two cards.

(a) Calculate the probability that the numbers on the two cards are the same.

(3)

(b) Calculate the probability that the sum of the numbers on the two cards is 5