1. If $P = \{2,4,6,8,10\}$, $Q = \{3,6,9,12,15\}$ and $R = \{5,10,15,20,25\}$, find $\text{n}(P \cap Q \cap R)$.

   A. 0 B. 1 C. 2 D. 3

2. Evaluate $2^0 + 2^{-1} + 2^{-2}$.

   A. $\frac{1}{8}$ B. $\frac{3}{4}$ C. $1\frac{1}{8}$ D. $1\frac{3}{4}$

3. The sides of a triangle of perimeter 260 cm are in the ratio $1\frac{1}{2} : 2 : 3$. What is the length of the longest side?

   A. 160cm B. 120cm C. 80cm D. 60cm

4. Given that $\log_{10} y = 1 + 3\log_{10} x$, express y in terms of x.

   A. $y = 10x^3$ B. $y = 10x^{-3}$ C. $y = x^3$ D. $y = x^{-3}$

5. If $X_{\text{four}} = 145_{\text{six}}$, find X.

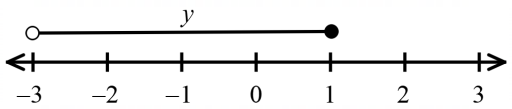
   A. 1101 B. 1111 C. 1010 D. 1001

6. A sequence is defined by the recurrence relation, $T_n = 1 + 2T_{n-1}$, for $n \geq 1$. If $T_1 = 8$, find T_3.

   A. 21 B. 33 C. 35 D. 37

7. If $\frac{5}{6}$ of a number is 5 greater than $\frac{2}{3}$ of it find the number.

   A. 60 B. 36 C. 30 D. 18

8. 

   Which of the following inequalities is represented on the number line?

   A. $-3 < y < 1$ B. $-3 \leq y < 1$ C. $-3 < y \leq 1$ D. $1 < y \leq 3$

9. Find the value of k if $a^2 + 6a + k = (a+3)^2$

   A. $\frac{2}{9}$ B. $\frac{9}{2}$ C. 6 D. 9

10. What are the coordinates of the point where the straight lines $x + 3y = -7$ and $5x - 2y = 16$ intersect?

    A. $(-2,-3)$ B. $(2,-3)$ C. $(-2,3)$ D. $(2,3)$

11. If $(x-2)$ and $(x+1)$ are factors of $x^2 + bx + c = 0$, find the value of $(b+c)$.

    A. -3 B. -2 C. 1 D. 2

12. If p, q, r, s are all positive and $p = \sqrt{q^2 - \frac{r^2}{s^2}}$, make s the subject of the elation.

    A. $s = \frac{r}{q^2 - p^2}$ B. $s = \frac{r}{p^2 - q^2}$ C. $s = \frac{r}{\sqrt{q^2 - p^2}}$ D. $s = \frac{\sqrt{p^2 - q^2}}{r}$

13. Multiply $\frac{mk}{3m + 3k}$ by $\frac{m+k}{m}$.

    A. $\frac{k}{3}$ B. $\frac{m-k}{3}$ C. $\frac{m+k}{3}$ D. $\frac{mk}{3}$

4. The equation of a straight line is $2x + 3y - 6 = 0$. Find the intercept on the y-axis.

A. (0,3) B. (0,2) C. (2,0) D. (3,0)

5. The angle of a sector of a circle of radius 6cm is 120°. Find the area of the sector in terms of π

A. $4\pi\text{cm}^2$ B. $8\pi\text{cm}^2$ C. $12\pi\text{cm}^2$ D. $24\pi\text{cm}^2$

6. Find the volume, in litres of a cylindrical drum of diameter 28cm and height 50cm. $\left[\text{Take } \pi = \frac{22}{7}\right]$

A. 31.8 litres B. 30.8 litres C. 29.8 litres D. 28.8 litres

7. A pendulum of a clock is 7cm long and swings through an arc of length 12cm Through what angle, corrected to the nearest degree, does the pendulum swing? [Take $\pi = \frac{22}{7}$]

A. 72° B. 92° C. 98° D. 118°

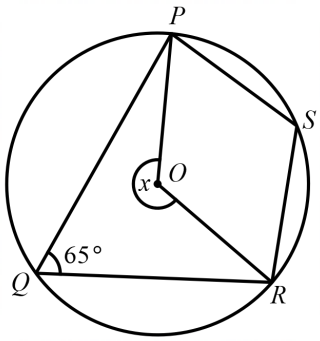
8. The lengths of the sides of a triangle, in centimetres, are l, $(l + 7)$ and $(l + 8)$. If its perimeter is 30cm, find the length of its longest side.

A. 13cm B. 12cm C. 6cm D. 5cm

9. If the interior angles of a pentagon are $2x$ $x, 2x, 3x$ and x, find the value of x.

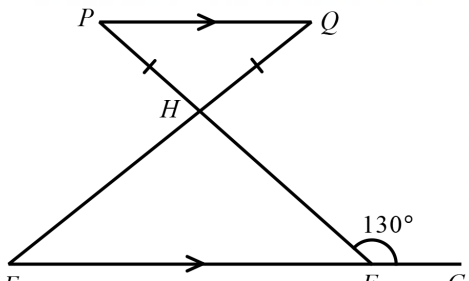
A. 30° B. 40° C. 50° D. 60°

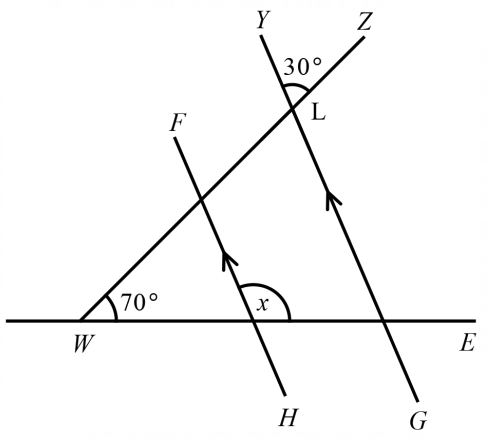
0. In the diagram, O is the centre of circle $PQRS$ and $\angle PQR = 65°$. Find the value of the angle x.



A. 115° B. 130° C. 230° D. 255°

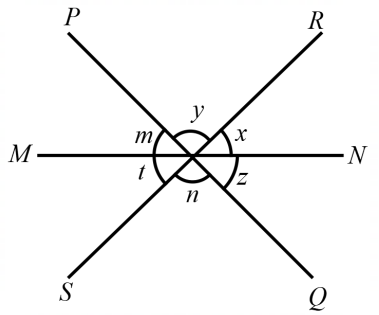
1. In the diagram, $PQ \parallel EG$, PHQ is an isosceles triangle and $\angle HFG$ is 130°. Find $\angle PHQ$.





A. 40° B. 60° C. 100° D. 150°

3. In the diagram, MN, PQ and RS are three intersecting straight lines. Which of the following statements is/are true?



I. $t = y$
II. $x + y + z + m = 180°$
III. $x + m + n = 180°$
IV. $x + n = m + z$

A. II only B. III only C. IV only D. I and IV only

4. Which of the following statements is **not** true of a rectangle?

A. The diagonals are equal.
B. There are only two lines of symmetry.
C. The diagonals bisect each other.
D. The diagonals intersect at right angles.

5. The dimensions of a rectangle are 14cm by 4cm. Calculate, correct to the nearest degree, the acute angle between its diagonals.

A. 26° B. 32° C. 64° D. 74°

6. If $\sin(x - 10)° = \cos(x + 10)°$, calculate the value of x.

A. 90° B. 60° C. 45° D. 40°

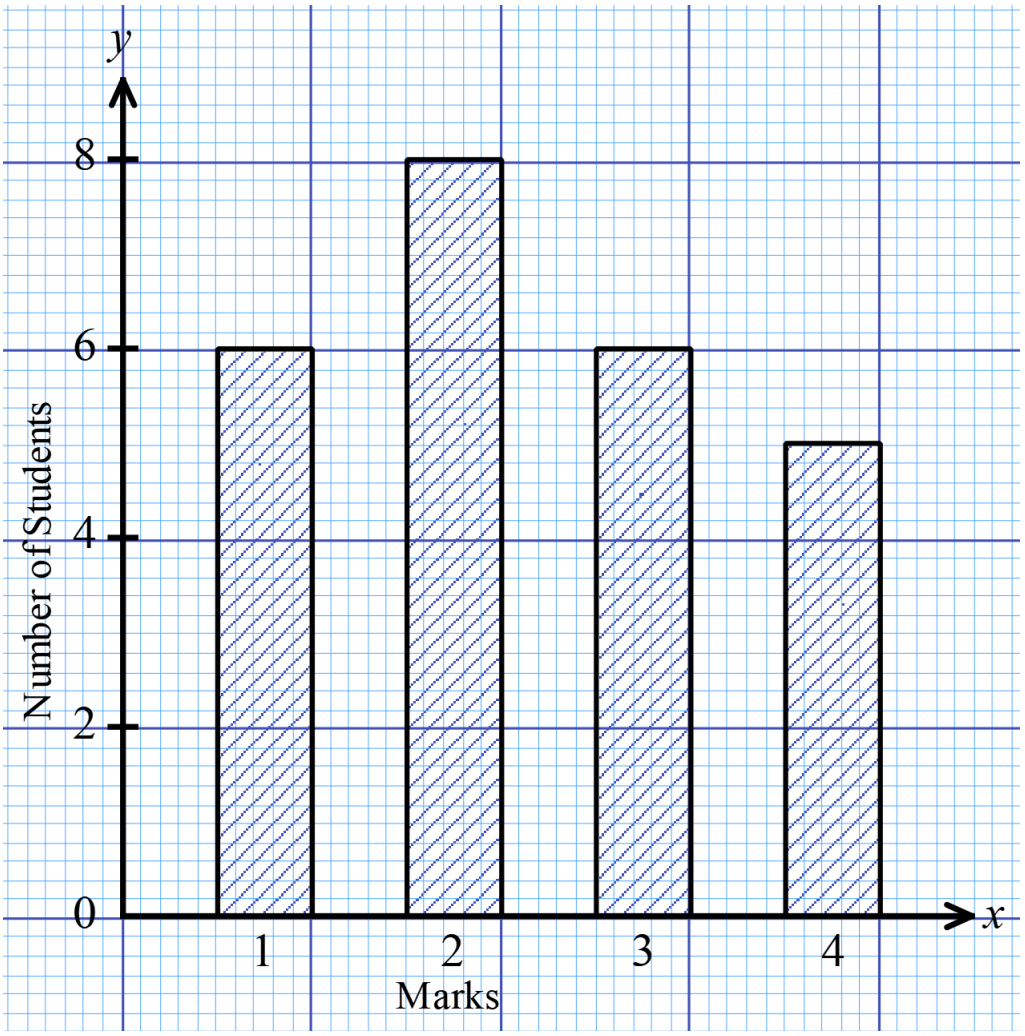
8. The mean of five numbers is 12. When another number is added, the mean becomes 11. Find the number that was added.

A. 3 B. 6 C. 7 D. 8

9. Two fair dice are thrown together once. What is the probability of getting the sum of 9?

A. $\frac{1}{36}$ B. $\frac{1}{18}$ C. $\frac{1}{9}$ D. $\frac{4}{9}$

he bar chart shows the frequency distribution of marks scored by students in a class test. *Use it answer Questions* ***30*** *and* ***31***.



0. How many students took the test?

A. 10 B. 24 C. 25 D. 30

1. What is the median of the distribution?

A. 2 B. 4 C. 6 D. 8

4. The dimensions of a cuboid are 20cm, 30 cm and 60cm. Find the length of the longest stick that can fit into the cuboid.

A. 62.5cm B. 65.0cm C. 70.0cm D. 73.3cm

5. Correct 0.081778 to three significant figures.

A. 0.0810 B. 0.0817 C. 0.0818 D. 0.0820

6. The length, l of a simple pendulum varies directly as the square of its period, T. A pendulum of length 99.4cm has a period of 2 seconds. Find, correct to two decimal places, the length of a pendulum of period 2.5 seconds.

A. 63.62cm B. 79.52cm C. 124.25cm D. 155.31cm

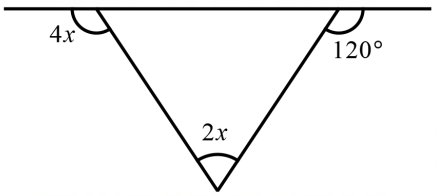
7. Mr. Nagbe borrowed GHC 8,400 at a simple interest rate of $26\frac{1}{2}\%$ per annum. How much did he pay back after 8 months?

A. GHC 8,784.00 B. GHC 9,884.00 C. GHC 11,780.00 D. GHC 12,620.00

8. Make x the subject of the relation $\frac{x}{q} - 2 = \frac{x}{p}$.

A. $x = \frac{2pq}{p+q}$ B. $x = \frac{pq}{p-q}$ C. $x = \frac{pq}{p+q}$ D. $x = \frac{2pq}{p-q}$

9.

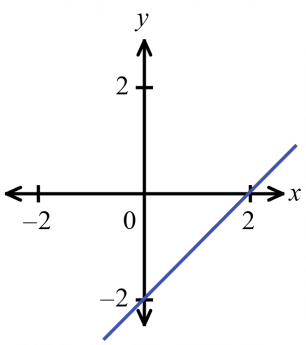


Find the value of x in the diagram.

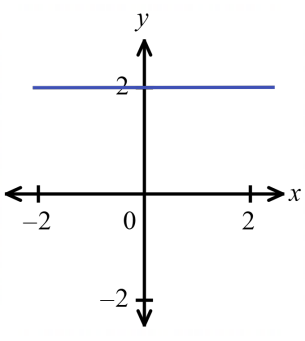
A. 120° B. 60° C. 40° D. 30°

10. Which of the following graphs best illustrates the equation $y = x - 2$?

A.



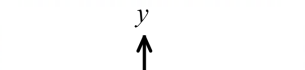
B.



C.



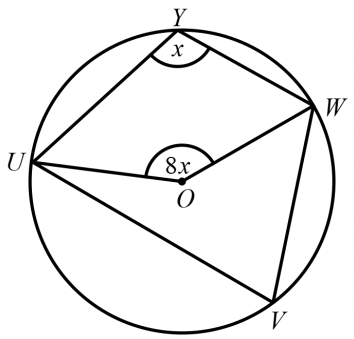
D.



1. A straight line passes through the points (1,6),(3,-2) and $(7, y)$. Find the value of y.

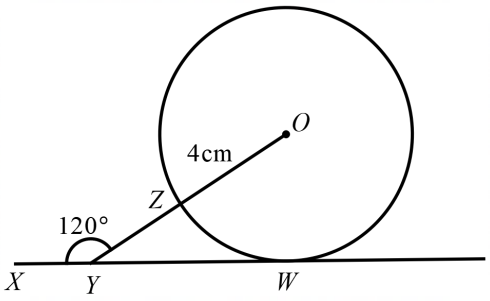
A. -18 B. -14 C. 14 D. 18

2. The diagram is a circle with centre O . U, V, W and Y are points on the circle. Find $\angle UVW$.



A. 144° B. 72° C. 40° D. 36°

3. The diagram shows a circle of radius $|OZ| = 4$ cm. XW is a tangent to the circle at W. If $\angle XYO = 120°$, find $|YZ|$.

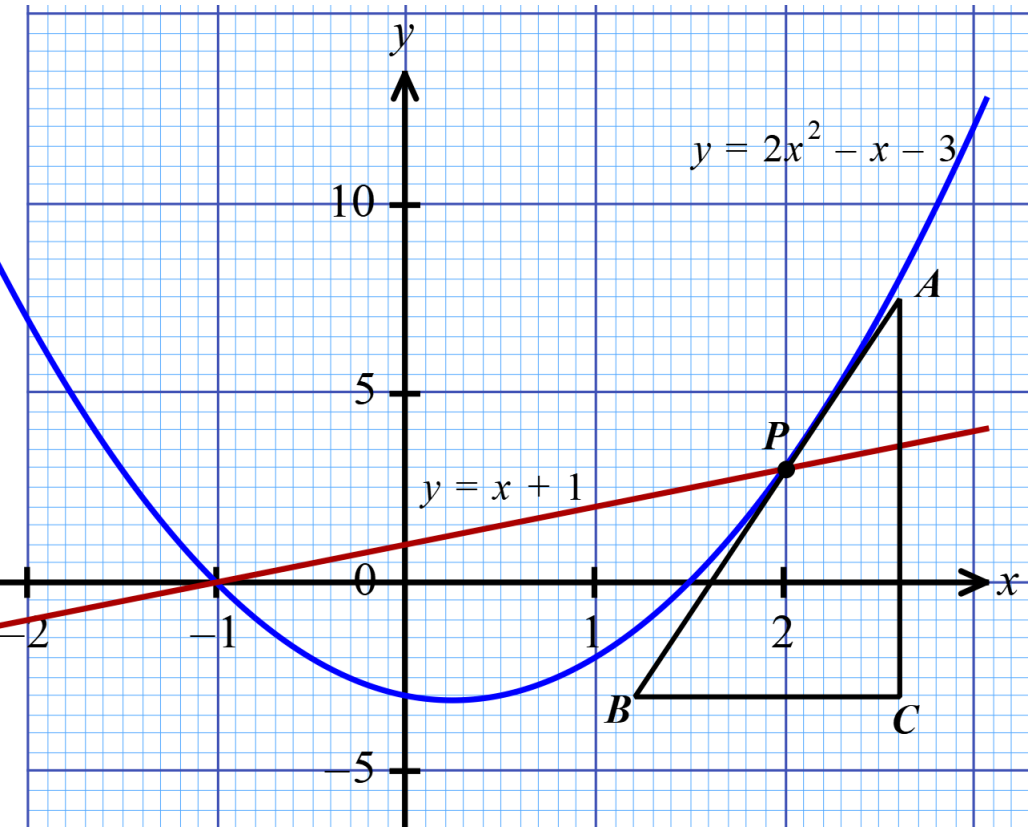


A. 2.32cm B. 1.84cm C. 0.62cm D. 0.26cm

4. A side and a diagonal of a rhombus are 10 cm and 12cm, respectively. Find its area.

A. 20cm^2 B. 24cm^2 C. 48cm^2 D. 96cm^2

The graphs are of the relations: $y = 2x^2 - x - 3$ and $y = x + 1$. *Use the graphs to answer Questions* ***45*** *and* ***46***.



45. What the gradient of the curve $y = 2x^2 - x - 3$ at the point P, correct to the nearest whole number.

A. 6 B. 7 C. 8 D. 9

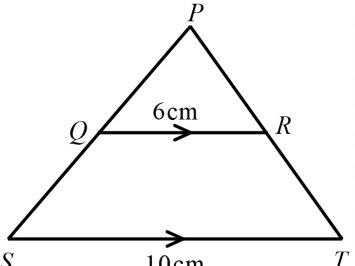
46. Find the roots of the equation $2x^2 - 2x - 4 = 0$

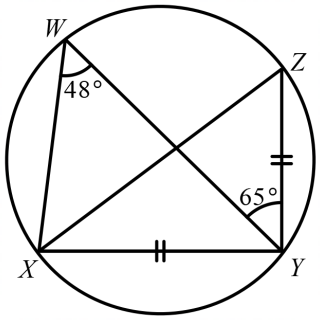
A. $x = -1, x = 2$ B. $x = 2, x = -\frac{1}{2}$ C. $x = 3, x = 1$ D. $x = -2, x = -2$

47. If $8^{(x-\frac{2}{3})} = 2^{x^2}$, find x.

A. -2 or -1 B. -2 or 1 C. 2 or -1 D. 2 or 1

48. In the figure, QR is parallel to ST. If $|PT| = 15$cm, find $|RT|$.





A. 19° B. 25° C. 45° D. 65°

0. A tank in the form of a cuboid holds 500 litres of water. If each of its length, breadth and height is reduced by 10 percent, calculate, in litres, the volume of water in the new tank.

A. 490.0 B. 450.0 C. 364.5 D. 256.5