



ÉCOLE GLOBALE

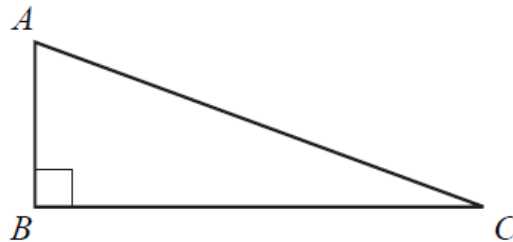
INTERNATIONAL GIRLS' SCHOOL
Dehradun

HOLIDAY HOMEWORK - CLASS IX A (Maths)

WORKSHEET 1

1.

In the right-angled triangle ABC , $\cos C = \frac{4}{5}$. Find angle A .



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2.

2 Which of the following numbers are irrational?

$$\frac{2}{3} \quad \sqrt{36} \quad \sqrt{3} + \sqrt{6} \quad \pi \quad 0.75 \quad 48\% \quad 8^{\frac{1}{3}}$$

Show that

$$1\frac{5}{9} \div 1\frac{7}{9} = \frac{7}{8} .$$

3.

4.

$$\frac{3}{5} < p < \frac{2}{3}$$

Which of the following could be a value of p ?

$$\frac{16}{27} \quad 0.67 \quad 60\% \quad (0.8)^2 \quad \sqrt{\frac{4}{9}}$$

5.

A meal on a boat costs 6 euros (€) or 11.5 Brunei dollars (\$).

In which currency does the meal cost less, on a day when the exchange rate is €1 = \$1.9037?
Write down all the steps in your working.

6.

Solve the equation $4x + 6 \times 10^3 = 8 \times 10^4$.

Give your answer in standard form.

7.

p varies directly as the square root of q .
 $p = 8$ when $q = 25$.

Find p when $q = 100$.

8.

Ashraf takes 1500 steps to walk d metres from his home to the station.
Each step is 90 centimetres correct to the nearest 10 cm.

Find the lower bound and the upper bound for d .

The points P , Q and R lie on a circle, centre O .
 TP and TQ are tangents to the circle.
Angle $TPQ = 54^\circ$.

Calculate the value of

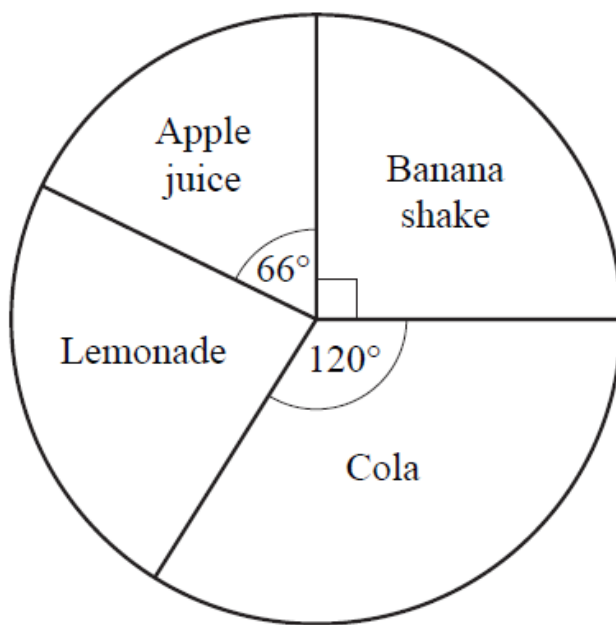
(a) x ,

(b) y ,

(c) z .

2.

60 students recorded their favourite drink.
The results are shown in the pie chart.



- (a) **Calculate** the angle for the sector labelled Lemonade.
- (b) Calculate the number of students who chose Banana shake.
- (c) The pie chart has a radius of 3 cm.
Calculate the arc length of the sector representing Cola.

3.

Write the following as a single fraction in its simplest form.

$$\frac{x+1}{x+5} - \frac{x}{x+1}$$

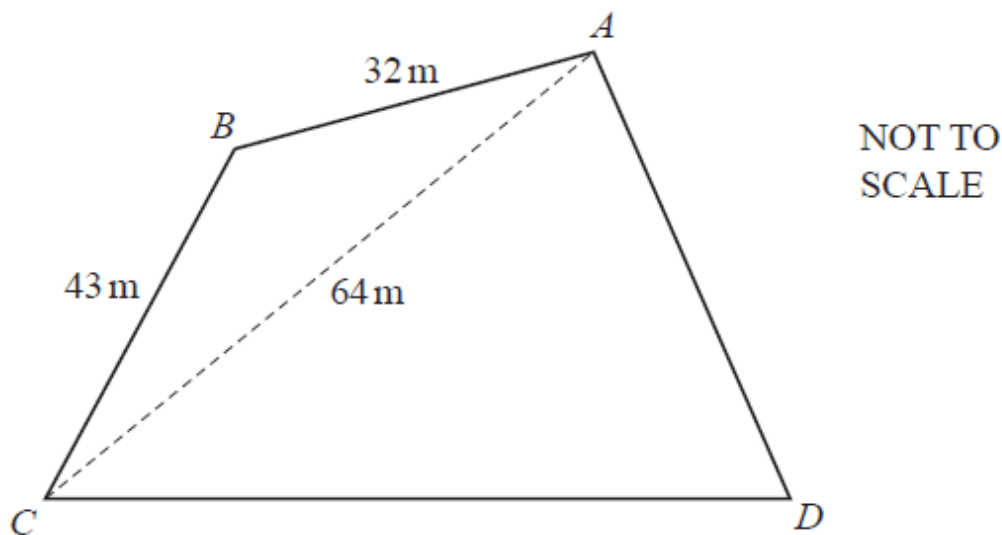
4.

Simplify

(a) $32x^8 \div 8x^{32}$,

(b) $\left(\frac{x^3}{64}\right)^{\frac{2}{3}}$.

5.



The diagram represents a field in the shape of a quadrilateral $ABCD$.
 $AB = 32\text{ m}$, $BC = 43\text{ m}$ and $AC = 64\text{ m}$.

- (a) (i) Show clearly that angle $CAB = 37.0^\circ$ correct to one decimal place.
(ii) Calculate the area of the triangle ABC .

(b) $CD = 70$ m and angle $DAC = 55^\circ$.

Calculate the perimeter of the whole field $ABCD$.

Points A , C and D lie on a circle centre O .

BA and BC are tangents to the circle.

Angle $ABC = 32^\circ$ and angle $DAB = 143^\circ$.

(i) Calculate angle AOC in quadrilateral $AOCB$.

WORKSHEET 3

1.

(a) Alfonso has \$75 to spend on the internet.

He spends some of the money on music, films and books.

(i) The money he spends on music, films and books is in the ratio

$$\text{music} : \text{films} : \text{books} = 5 : 3 : 7.$$

He spends \$16.50 on music.

Calculate the **total** amount he spends on music, films and books.

(ii) Find this total amount as a percentage of the \$75.

(b) The download times for the music, films and books are in the ratio

$$\text{music} : \text{films} : \text{books} = 2 : 9 : 1.$$

The **total** download time is 3 hours and 33 minutes.

Calculate the download time for the films.

Give your answer in hours, minutes and seconds.

- (c) The cost of \$16.50 for the music was a reduction of 12% on the original cost.
Calculate the original cost of the music.

2.

- (a) Solve the inequality.

$$7x - 5 > 3(2 - 5x)$$

- (b) (i) Factorise completely.

$$pq - 2q - 8 + 4p$$

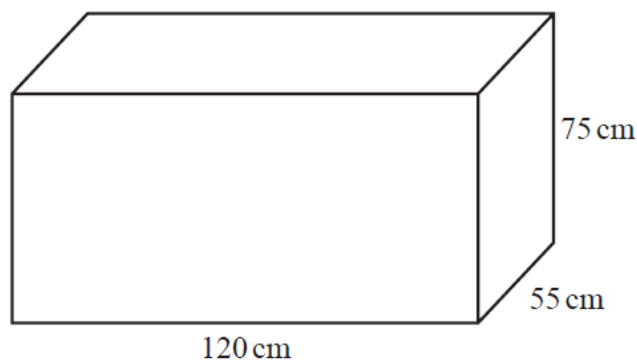
- (ii) Factorise.

$$9p^2 - 25$$

- (c) Solve this equation by factorising.

$$5x^2 + x - 18 = 0$$

3.

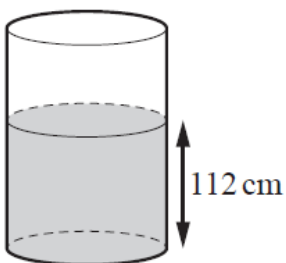


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The diagram shows a water tank in the shape of a cuboid measuring 120 cm by 55 cm by 75 cm.
The tank is filled completely with water.

- (a) Show that the capacity of the water tank is 495 litres.

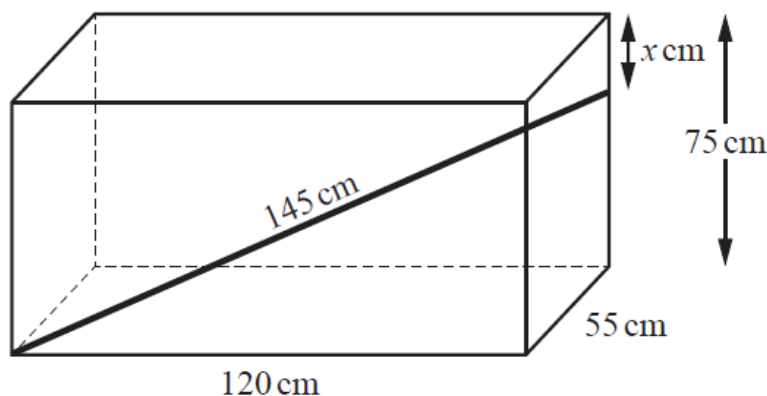
- (b) (i) The water from the tank flows into an empty cylinder at a uniform rate of 750 millilitres per second.
 Calculate the length of time, in minutes, for the water to be completely emptied from the tank.
- (ii) When the tank is completely empty, the height of the water in the cylinder is 112 cm.



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Calculate the radius of the cylinder.

(c)



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A rod of length 145 cm is placed inside the water tank.
 One end of the rod is in the bottom corner of the tank as shown.
 The other end of the rod is x cm below the top corner of the tank as shown.

Calculate the value of x .

- (d) Calculate the angle that the rod makes with the base of the tank.

4.

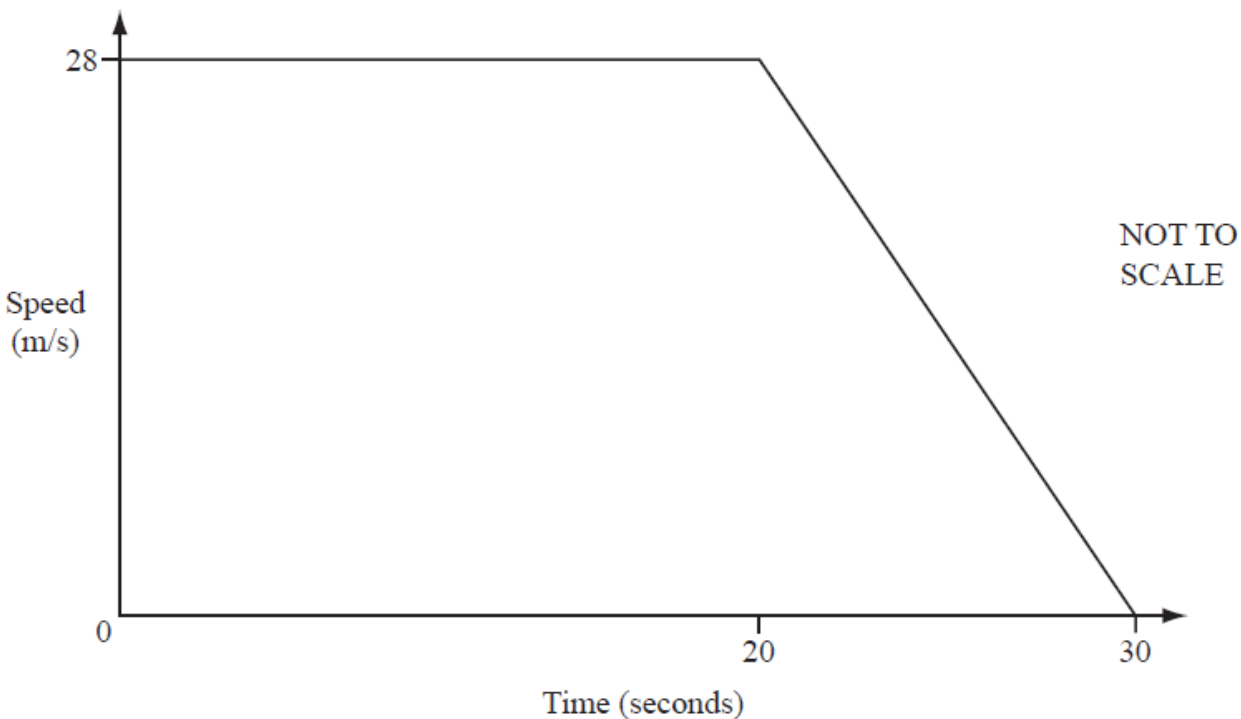
- (a) (i) Factorise completely the expression $4x^2 - 18x - 10$.
- (ii) Solve $4x^2 - 18x - 10 = 0$.

(b) Solve the equation $2x^2 - 7x - 10 = 0$.

Show all your working and give your answers correct to two decimal places.

(c) Write $\frac{6}{3x-1} - \frac{2}{x-2}$ as a single fraction in its simplest form.

5.



The diagram shows the speed-time graph of a car.

It travels at 28 m/s for 20 seconds and then decelerates until it stops after a further 10 seconds.

(a) Calculate the deceleration of the car.

(b) Calculate the distance travelled during the 30 seconds.

WORKSHEET 4

1.

A sphere has a volume of 80 cm^3 .

Calculate the radius of the sphere.

[The volume, V , of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

2.

A water pipe has a circular cross section of radius 0.75 cm .

Water flows through the pipe at a rate of 16 cm/s .

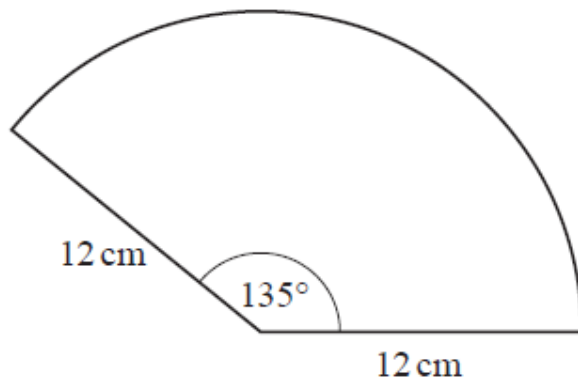
Calculate the time taken for 1 litre of water to flow through the pipe.

3.

(a) Factorise $x^2 + x - 30$.

(b) Simplify $\frac{(x - 5)(x + 4)}{x^2 + x - 30}$.

4.



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The diagram shows a sector of a circle of radius 12 cm with an angle of 135° .

Calculate the perimeter of the sector.

5.

Write as a single fraction in its simplest form.

$$\frac{2}{x+3} + \frac{3}{x+2}$$

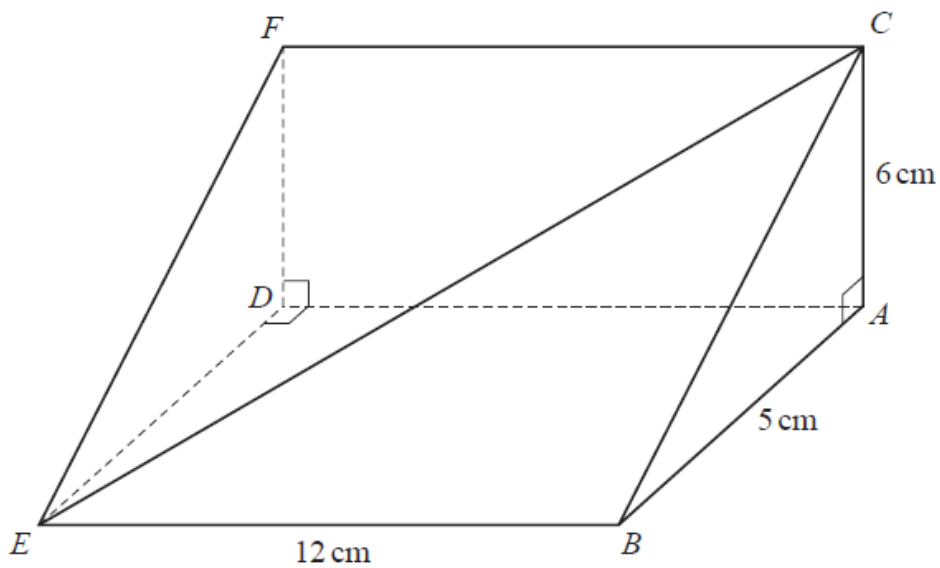
6.

t varies inversely as the square root of u .

$t = 3$ when $u = 4$.

Find t when $u = 49$.

7.



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The diagram shows a triangular prism of length 12 cm.
 Triangle ABC is a cross section of the prism.
 Angle $BAC = 90^\circ$, $AC = 6$ cm and $AB = 5$ cm.

Calculate the angle between the line CE and the base $ABED$.