

CSEE ‘Question Booklet’ Basic Maths (Form 4)



Tanzania

LESSONS

- 1. Basic Numbers – Page 3**
- 2. Indices and Logs- Page 10**
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MY REVISION PLANNER

BASIC MATHS (CSEE - Form 4) 5 Week Revision Planner

Week 1	Week 2	Week 3
Video 1 (Section A) Basic Numbers	Video 4 (Section A) Coordinate Geometry	Video 7 (Section A) Units/Rates & Variation
 Worksheet  Video	 Worksheet  Video	 Worksheet  Video
Video 2 (Section A) Indices and Logs	Video 5 (Section A) Vectors	Video 8 (Section A) Ratio & PL
 Worksheet  Video	 Worksheet  Video	 Worksheet  Video
Video 3 (Section A) Algebra & Sets	Video 6 (Section A) Geometry	Video 9 (Section A) Sequences & Series
 Worksheet  Video	 Worksheet  Video	 Worksheet  Video

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BASIC MATHS (CSEE - Form 4) 5 Week Revision Planner

Week 4	Week 5
Video 10 (Section A) Trigonometry & Pythagoras	Video 12 (Section B) Statistics
 Worksheet  Video	 Worksheet  Video
Video 11 (Section A) Quadratic Equations	Video 13 (Section B) 3D Figures/Circles
 Worksheet  Video	 Worksheet  Video

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CSEE- Basic Maths

Basic Numbers

Questions and Answers

Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic: Basic Numbers

Section A

Lesson 1 (Revision Week 1)

Instructions: Complete this worksheet and watch this revision video simultaneously on

www.mathsmemory.co.uk/International

Pause and Play the video unlimited times to review your work and write the answers in the blank spaces. Once you have written your answers, check these with the tutorial answers, as explained in the video.

Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

a) i) $550 \text{ mm} = \underline{\hspace{2cm}} \text{ cm}$

ii) $6500 \text{ m} = \underline{\hspace{2cm}} \text{ km}$

iii) $0.057 \text{ km} = \underline{\hspace{2cm}} \text{ m}$

iv) $0.87 \text{ m} = \underline{\hspace{2cm}} \text{ mm}$

Bronze



a) Write 3549 to

i) 1 significant figure

ii) 2 significant figures

b) Write 7.853 to

i) 1 decimal place

ii) 2 decimal places

c) Estimate : $\frac{24.3 \times 55}{0.025}$

Bronze



a) Work out :

i) $1\frac{3}{4} + 2\frac{1}{2}$

ii) $2\frac{1}{4} \div 3\frac{1}{2}$

Bronze



a) From the set of numbers { 3,4, 6,7,8,12,15,20,25,27 ,29}; write down :

i) the prime numbers

ii) Square numbers

iii) Cube numbers

iv) Multiples of 4



Find the GCF of 18,48,99.



Find the LCM of 18,30,45.

Bronze


Bus A , B and C leave the main bus depot at 8am.

Bus A stops every 12 minutes at bus stops along it's journey.

Bus B stops every 15 minutes at bus stops along it's journey.

Bus C stops every 20 minutes at bus stops along it's journey.

When is the next time they will all meet together at a bus stop?

Bronze


a) If $p = 4.2 \times 10^5$ and $q = 2.5 \times 10^2$ find the values of:

i) $p \times q$

ii) $p - q$

b) If $p = 2.1 \times 10^7$ and $q = 3 \times 10^3$ find the values of

i) $p \div q$

Silver



a) Edward buys 3 litres of water. His cup can take a maximum capacity of 200ml. How many days will it him take to finish all the water.

b) A school's mini bus has a maximum capacity of 30 pupils. A school has 440 pupils. How many mini buses will it need.

Silver



a) Samuel's Maths exam paper has a total of 120 marks available. 25% is for Geometry, 60% for Algebra . The remainder percentage is Statistics.

What is the mark allocation for Statistics?

b) Jessica has 45,000 shillings. She spends $\frac{2}{5}$ on her rent. She spends $\frac{1}{3}$ on travel.

How many shillings does she have left?

Silver





CSEE- Basic Maths

Indices & Logs

Questions and Answers

Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic: Indices and Logs

Section A

Lesson 2 (Revision Week 1)

Instructions: Complete this worksheet and watch this revision video simultaneously on

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Question 1

a) Simplify $\frac{2}{1 + \sqrt{5}}$

b) Simplify $\frac{2}{3\sqrt{2} - 1}$

Bronze



Question 2

Work out the value of x

a) $2^x = \frac{1}{8}$

Hence work out the value of $a + b + c$

b) $2^a = \frac{1}{8}$, $2^b = 8\sqrt{2}$, $2^c = \frac{1}{2\sqrt{2}}$

Bronze



Question 3

Simplify

a) $\log_3 3 + \log_3 9 =$

b) $\log_2 12 - \log_2 3 =$

c) $\log 3^x =$

Work out the value of x

d) $\log_2 x = 3$

Bronze



Question 4

Work out the value of x

a) $3^3 \times 9 = 3^x$

b) $16^{\frac{1}{5}} \times 2^x = 8^{\frac{3}{4}}$

c) $4^{2x-4} = 8^{x+2}$

Silver



Question 5

a) Show that $\frac{2 - 4\sqrt{2}}{2 + 2\sqrt{2}}$ can be simplified to $3\sqrt{2} - 5$

Silver





Question 6

Work out the value of n

a) $n \log_3 81 = \log_2 8$

Silver



Question 7

Work out the value of y

a) $\log_3 (4y - 2) - 2 = \log_3 (y + 2)$

Silver



Question 8

Work out the value of

a) $8^{\frac{1}{4}} \times (\sqrt{2})^{-4} \times 2^{\frac{3}{2}}$

Silver



Question 9

Work out the value of x and y

a)
$$\frac{2^{x-2}}{3^{3y}} = 432$$

Silver



Question 10

Given that $\log 3 = 0.4771$ and $\log 2 = 0.301$, find the value of $\log(3^{3/8})$, without using mathematical tables.



Question 11

Express the expression

a) $2^{3y-1} + 3 \times 2^{y+2}$

in terms of P given that $P = 2^y$



Question 12

a) Work out the value of x

$$\sqrt[3]{4^{3x-3}} + 8 = 72$$

Gold



Question 13

Evaluate $\log_{10}(13500)$, given that $\log_{10} 2 = 0.301$, $\log_{10} 3 = 0.4771$
 $\log_{10} 5 = 0.699$

Platinum





CSEE- Basic Maths

Algebra & Sets

Questions and Answers

Videos with expert tutorials on each
topic

CSEE Basic Maths

Revision Topic: Algebra & Sets

Section A

Lesson 2 (Revision Week 1)

Instructions: Complete this worksheet and watch this revision video simultaneously on

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Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

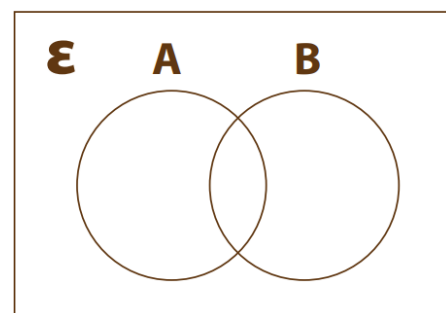
Question 1

$$\mathcal{E} = \{3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$$

$$\mathbf{A} = \{ \text{Odd Numbers between 3 and 12} \}$$

$$\mathbf{B} = \{ \text{Multiples of 3 between 3 and 12} \}$$

a) Complete the Venn diagram to represent this information.



b) A number is chosen at random from the universal set $\mathcal{E}$.
Find the probability that the number is in the set $A \cap B$

Bronze

Question 2

a) Factorise $3x^2 + 4x - 4$

Hence solve $3x^2 + 4x - 4 = 0$

b) Solve $6x^2 - 7x - 3 = 0$

c) Solve $8x^2 - 12x$

Bronze



Question 3

a) Solve $3n - 5 > 22$

b) Solve $7n - 2 \leq 4n + 7$

c) Solve $\frac{2}{5}n - 2 \geq \frac{1}{4} + 1$

Bronze



Question 4

Here is a Venn diagram.

Write down the numbers that are in the set;

a) $A \cap B$

b) $A \cup B$

c) B'

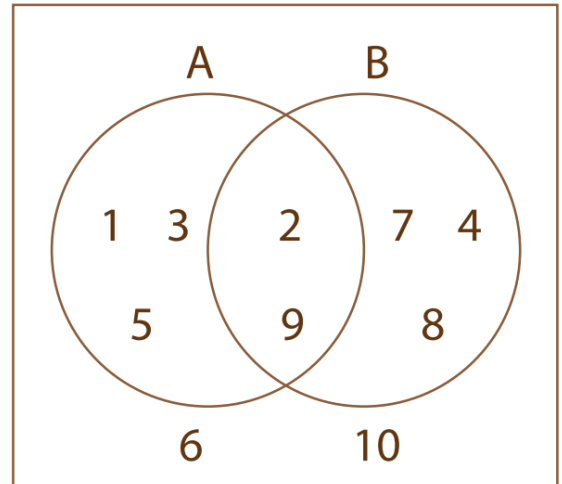
d) $A \cap B'$

e) $A \cup B'$

A number is chosen at random.

f) Find $P(A' \cap B')$

g) Find $P(A' \cup B')$



Silver



Question 5

Here is a Venn diagram.

There are 55 pupils enrolled for a sports club. 28 are enrolled for Football and 30 are enrolled for Tennis. 8 are enrolled for both of these sports.

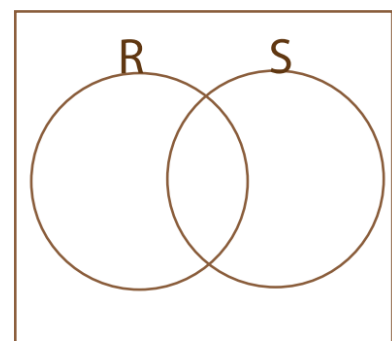
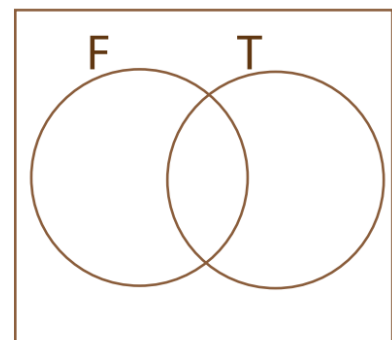
(a) By using a Venn diagram, find the number of pupils who choose neither sport.

b) In a class of 50 students, 15 students enjoy reading, 30 enjoy sports and 10 enjoy neither.

(i) Represent this information in a Venn diagram.

Using part b (i) find;

(ii) the number of students enjoying both subjects



Silver



Core 6 - Silver

Topic: Algebra and Sets

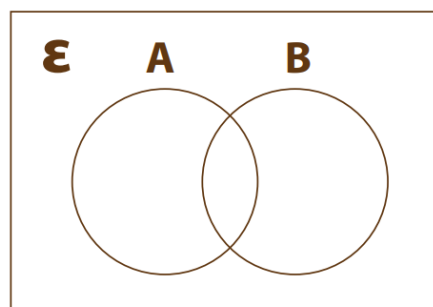
Question 6

$$\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$$

$$A = \{ \text{Multiples of 3} \}$$

$$B = \{ \text{Even Numbers} \}$$

a) Complete the Venn diagram to represent this information.



Write down the numbers that are in the set

b) $A \cap B$

c) $A \cup B$

d) A'

e) $A' \cap B$

f) $A' \cup B$

g) Find $n(A' \cap B')$

h) Find $n(A' \cup B')$

Silver



Core 7 - Gold

Topic: Algebra and Sets

Question 7

Here is a Venn diagram.

In a certain school, 36 students were asked whether they would choose Physics or Maths for advanced studies. The number of students who chose Physics and Maths was double the number of students that chose Physics only. Furthermore, the number of students who chose Maths was 4 more than triple the number of students that chose Physics. However, 2 students chose neither Physics or Maths.

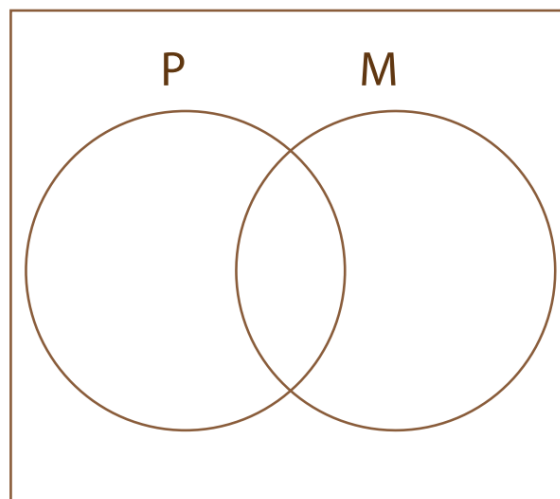
a) Represent this information on a Venn diagram, letting x be the number of students that chose Physics only.

b) Use the results obtained in part (a) to determine a student selected at random likes;

(i) Maths only

(ii) Physics and Maths

(iii) Physics or Maths



Gold



Question 8

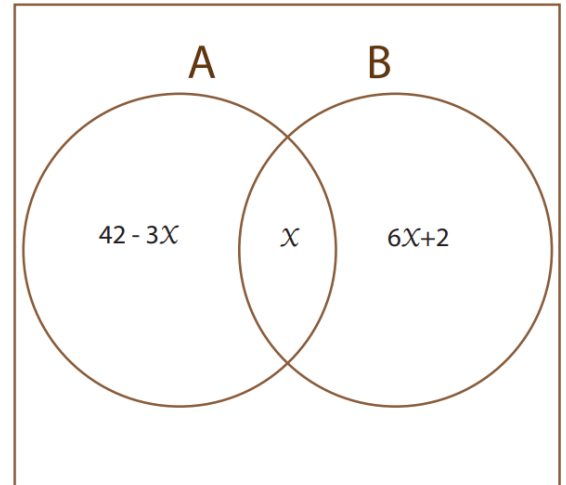
The Venn diagram shows sets A and B. There are 95 elements in the entire set.

If $n(A \cup B) = 76$, calculate;

(i) The value of x

(ii) Find $n(A' \cap B')$

(iii) Find $n(A' \cup B')$



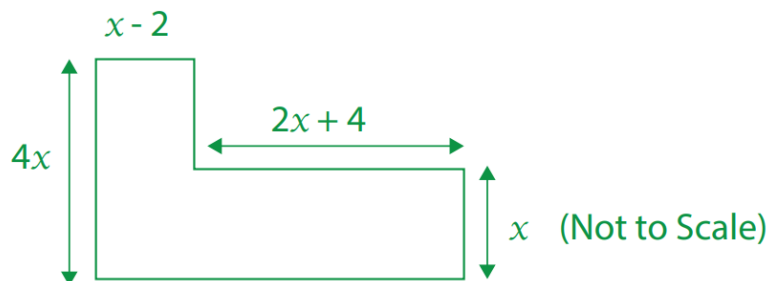
Gold



Question 9

The area of the shape is 40cm^2 .

a) Show that $3x^2 - 2x - 20 = 0$.



b) Solve $3x^2 - 2x - 20 = 0$.

Give your solutions correct to 3 significant figures.

c) Hence, work out the shortest side.

Gold



Calculator



Question 10

a) Factorise $5x^2 + 3xy - 2y^2$

b) $9 - (2x - 1)^2$

Platinum





CSEE- Basic Maths

Coordinate Geometry

Questions and Answers

Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic: Coordinate Geometry

Section A

Lesson 4 (Revision Week 2)

Instructions: Complete this worksheet and watch this revision video simultaneously on

www.mathsmemory.co.uk/International

Pause and Play the video unlimited times to review your work and write the answers in the blank spaces. Once you have written your answers, check these with the tutorial answers, as explained in the video.

Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

Question 1

i) A straight line L_1 passes through the coordinates $A(-1,1)$ and $B(2,7)$.
Find the gradient of L_1

ii) L_2 goes through points $A(4,-3)$ and $B(2,-2)$.
Find the equation of L_2 in terms of $y = mx + c$.

Bronze



Question 2

Which ONE line below is parallel to $y = \frac{1}{2}x - 3$.

A: $y = -\frac{1}{2}x + \frac{1}{2}$

B: $2y = 1 - x$

C: $2x - 4y = 6$

D: $2y = 4x + 3$

Bronze



Question 3

Find the equation of the line that passes through point (3,7) and the midpoint between (1,5) and (3,7).

SILVER



Question 4

Find the equation of the line that passes through point $(-2, 3)$ and which is parallel to the line $2x + 3y - 10 = 0$.



Question 5

i) Find the intersection point of $y = 3x + 4$ and $y = 6 - x$

ii) Find the intersection point of $3x + 2y = 12$ and $2x + 4y = 8$



Question 6

i) Find the perpendicular gradient to:

- a) 4
- b) $\frac{2}{3}$
- c) $-\frac{5}{2}$

ii) Find the equation of the line passing through the mid point of A(-3, 2) and B(1, -6) and perpendicular to AB.

Gold



Question 7

Find the equation of the line passing through point (4, - 1) and perpendicular to the line crossing the x-axis at 2 and the y axis at -3.

Gold





Question 8

Show that triangle ABC is a right angle where $A = (2,1)$, $B = (2,1)$ and $C = (1,3)$.

Platinum





CSEE- Basic Maths

Vectors

Questions and Answers

Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic: Vectors

Section A

Lesson 5 (Revision Week 2)

Instructions: Complete this worksheet and watch this revision video simultaneously on

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Pause and Play the video unlimited times to review your work and write the answers in the blank spaces. Once you have written your answers, check these with the tutorial answers, as explained in the video.

Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

Question 1

Find the distance between points A (-3 1) and B (1,-2)

Bronze



Question 2

A ship sails at a velocity of 40km/h north. Water flows 10km/h due west.

Calculate the resultant velocity of the boat. Give your answer to 2 decimal places.

Bronze

Question 3

Given the vectors $\underline{a} = 3\mathbf{i} + 4\mathbf{j}$, $\underline{b} = 2\mathbf{i} + 5\mathbf{j}$ and $\underline{c} = 3\mathbf{i} + 3\mathbf{j}$, determine the magnitude of their resultant.

Silver

Question 4

Given vectors $\underline{a} = 4\mathbf{i} + 10\mathbf{j}$, $\underline{b} = 15\mathbf{i} + 10\mathbf{j}$

(i) Find the vector and $\underline{c} = 3\underline{a} - \underline{b}$ and its magnitude correctly to 3 significant figures.

(ii) Represent vector $\underline{c}$ in part (i) on the x - y plane.

Silver



Question 5

Given $\underline{a} = 2\mathbf{i} + 3\mathbf{j}$, $\underline{b} = 6\mathbf{i} - 2\mathbf{j}$ and $\underline{c} = 4\mathbf{i} + 6\mathbf{j}$, find:

i) the vector $\underline{d} = 2\underline{a} - \underline{b} + \frac{1}{2}\underline{c}$

(ii) a unit vector in the direction of $\underline{d}$

Silver



Question 6

If $\underline{a} = 3\mathbf{i} + 2\mathbf{j}$, $\underline{b} = 15\mathbf{i} - 11\mathbf{j}$ and $\underline{c} = 3\mathbf{i} - 5\mathbf{j}$, find the value of x and y such that $x\underline{a} + y\underline{c} = \underline{b}$.

Gold

Question 7

If $\underline{a} = 3\mathbf{i} + 2\mathbf{j}$, $\underline{b} = 15\mathbf{i} - 11\mathbf{j}$ and $\underline{c} = 3\mathbf{i} - 5\mathbf{j}$, find the value of x and y such that $x\underline{a} + y\underline{c} = \underline{b}$.

Gold



CSEE- Basic Maths

Geometry

Questions and Answers

Videos with expert tutorials on each topic

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Revision Topic: Geometry

Section A

Lesson 6 (Revision Week 2)

Instructions: Complete this worksheet and watch this revision video simultaneously on www.mathsmemory.co.uk/International

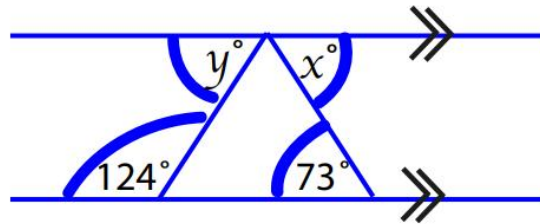
Pause and Play the video unlimited times to review your work and write the answers in the blank spaces. Once you have written your answers, check these with the tutorial answers, as explained in the video.

Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

Core 1 - Bronze

Topic: **Geometry**

Work out



a) $x =$ _____

Reason: _____

b) $y =$ _____

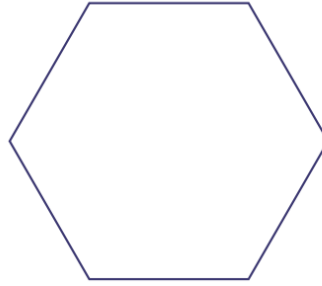
Reason: _____

Bronze



Question 2

a) What is the exterior angle?



b) What is the interior angle?

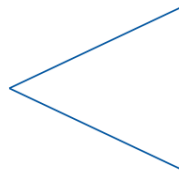
Bronze

Question 3

a) Draw the perpendicular bisector between points A and B.

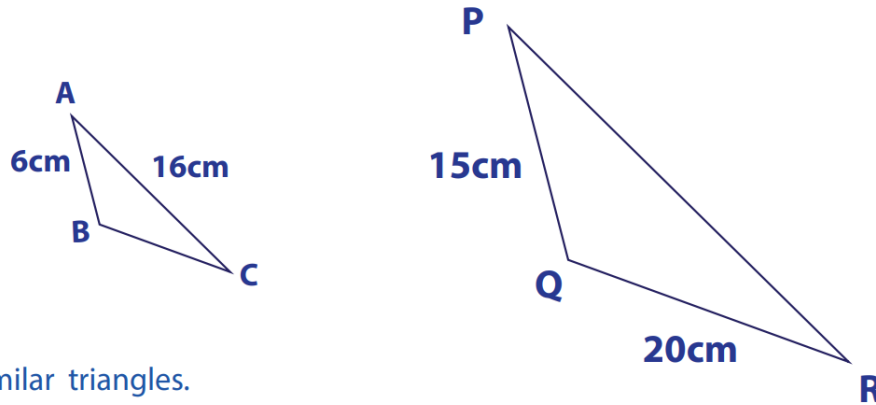


b) Draw the angle bisector.



Bronze

Core 4 - Bronze Topic: Geometry



ABC and PQR are similar triangles.

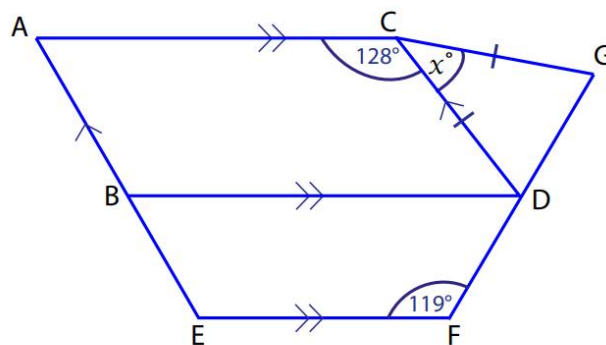
a) Work out the length PR.

b) Work out the length BC.



Core 5- Silver

Topic: Geometry



AC, BD and EF are parallel lines.

ABCD is a parallelogram

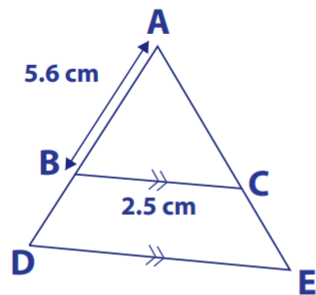
Angle EFD = 119° . Angle ACD = 128°

Work out the size of angle x .

Show all working.



Question 6



Triangles ABC and ADE are similar triangles. BC and DE are parallel lines.

$AD = 8.4$, $AB = 5.6$ cm, $BC = 2.5$ cm.

a) Work out the length DE.

b) $AE = 9$ cm. Work out length CE.



Question 7



These two triangular prisms are mathematically similar.
The surface area of A is 50 cm^2 .

a) Find the surface area of B.



Question 9

A regular hexagon is inscribed in a circle. If the perimeter of the hexagon is 30 cm, find:

- a) The radius of the circle.
- b) The area of the circle.
- c) The area of the regular hexagon.



Question 10

Solid A and Solid B are mathematically similar.

The ratio of the surface area of solid A to the surface area to solid B is 4:25.

The length of B is 25cm.

Show that the length of A is 2.5cm.





CSEE- Basic Maths

Units/ Rates & Variations

Questions and Answers
Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic: Units/Rates & Variations

Section A

Lesson 7: (Revision Week 3)

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Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

Maureen wants to buy a bag of bananas.

Pack A
8 bananas
£1.10

Pack B
14 bananas
£1.70

Which pack is the best value for money?

Bronze



Calculator

a) Here is a list of ingredients for making 12 chocolate cupcakes.

120 g butter
160 g flour
2 eggs
40 g chocolate chips

James wants to make 30 chocolate cupcakes.
Work out how much of each ingredient he will need?

Bronze



a) Massimo is on holiday in Thailand.

The exchange rate is £1 = 40 Thai Bahts.

He set a budget of £3000 for the entire holiday.

He spent 32,000 Thai Bahts on flights.

He spent 44,000 Thai Bahts on accommodation.

How much spending money, in Thai Bahts, will Massimo have left to spend?
(assuming full budget)

Bronze



Question 4

Nicole is travelling to the USA.
She has £250 in the UK.

The exchange rate is £1 = \$1.40

a) How many dollars can she exchange in London?

b) On her return she has \$490 left. How many pounds could she get from this amount?
(Assume same exchange rate as above)

Bronze



Calculator

Question 5

a) It takes 4 men 12 days to complete a garden landscaping project.
How many days would it take 6 men to complete the project?

b) State one assumption you made in working out your answer to part (a)

Silver



Question 6

y is directly proportional to the square of x . When $y = 10$, $x = 2$.

a) Express y in terms of x

b) Find the value of y when $x = 4$

c) Find the value of x when $y = 160$

d) Sketch the graph

Silver



Question 7

c is inversely proportional to m . When $c = 40$, $m = 5$.

a) Express c in terms of m

b) Find the value of c when $m = 10$

c) Find the value of m when $c = 25$

d) Sketch the graph.

Silver



Question 8

The table shows a set of values for x and y . y is directly proportional to x .

x	1	2	3	4
y	4	8	12	16

a) Find an equation for y in terms of x .

b) Find the value of x when $y = 24$.

The table shows a set of values for x and y . y is inversely proportional to the square of x .

x	1	2	3	4
y	6	$\frac{3}{2}$	$\frac{2}{3}$	$\frac{3}{8}$

c) Find an equation for y in terms of x

d) Find the positive value of x when $y = 54$.

Silver



Question 9

y is directly proportional to d^2 . d is inversely proportional to x .

Given that $y = 12$, $x = 1$ and $d = 2$, find a formula for y in terms of x .

Gold



Question 10

y is inversely proportional to the square of x .

$y = 20$ and $x = 2a$

Show that $y = 5$, when $x = 4a$.

Gold

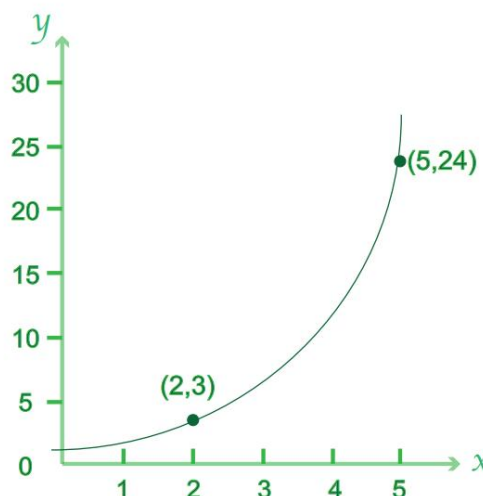


Question 11

This sketch shows part of a graph with equation $y = pq^x$

a) The points with coordinates (2,3) and (5,24) lie on the line. Find the value of p and q .

b) Another coordinate which lies on the line is (k , 12). Find the value of k .



Platinum





CSEE- Basic Maths

Ratio & Profit/ Loss

Questions and Answers
Videos with expert tutorials on each topic

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Revision Topic: Ratio & Profit/Loss

Section A

Lesson 8 (Revision Week 4)

Instructions: Complete this worksheet and watch this revision video simultaneously on

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Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

a) Find 15% of £520

b) Massimo achieves 78% in a test. Sarah scores 27 out of 36 in a test.
What is the difference between Massimo and Sarah's result?

Bronze


Question 2

- a) Amiee's travel commute cost £1200 in 2020. In 2021, her commute cost had increased to £1260. What was the percentage increase in her travel cost from 2020 to 2021?
- b) Sean bought a car for £12,500. The following year it had decreased to £10,000. What was the percentage decrease in the value of the car over the year?

Bronze



Question 3

- a) Leon has £4000 in his savings account. The interest rate is 2.8% per year. How much does Leon have after one year in his savings account?
- b) Alice buys a flat for £150,000. It has decreased in value by 4% over the year. How much is the flat worth now?
- c) Coby has run 12 km in a marathon. This is only 40% of the whole race. What is the total distance of the marathon?

Bronze



Amy, Beth and Carl share £240 in the ratio 3:4:5.

How much do they each receive?

Amy:_____

Beth:_____

Carl:_____

Bronze


ABC is a straight line.

The ratio of length AB:BC = 2:5.

BC = 60 m

a) Work out the length AB.

b) Work out the length AC.

Bronze


Question 6

Ben is 5 years younger than Amy. Carl is double Ben's age. The sum of their ages is 33 years.

Work out all their ages

Amy:_____

Ben :_____

Carl:_____

Silver



Question 7

Sogol invested an amount of money at 4% per annum, compound interest. At the end of 2 years, the value of the investment was £3652.25.

Calculate the initial amount of money that Sogol invested.

Silver



Question 9

Lily started a business on 1st September, 2021 with a capital of Tshs 20, 000/= cash.

September 2. bought computer for cash 10,000/=

4. Sold goods for cash 4,000/=

5 . Purchased goods on credit 2,000/=

8 . Paid wages 6,000/=

9. Debtors paid 2,500/=

10. Purchased goods 3,000/=

11. Paid rent 5,000/=

15. Sold goods on credit 8,000/=

20. Paid interest 500/=

21. Sold goods 3,000/=

22. Interest received on investments 300/=

29. Paid for travel expenses 1,000/=

By using these transactions, prepare the cash account.



Question 10

Use the following trial balance to prepare trading, profit and loss account for Mr Smith as at 31st December 2016.

Account name	Dr	Cr
Cash	1,500,000	
Capital		2,800,000
Purchases	1,800,000	
Rent	300,000	
Computer	500,000	
Furniture	1,300,000	
Sales		3,000,000
Wages	400,000	
	5,800,000	5,800,000





CSEE- Basic Maths

Series & Sequence

Questions and Answers

Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic: Sequences & Series

Section A

Lesson 9 (Revision Week 4)

Instructions: Complete this worksheet and watch this revision video simultaneously on

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Pause and Play the video unlimited times to review your work and write the answers in the blank spaces. Once you have written your answers, check these with the tutorial answers, as explained in the video.

Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

a) Determine which series are arithmetic and geometric?

1) 5,10,15,20

2) 3,6,12,24

3) 12,6,3,1.5

4) -2,3,8,13

5) What is the fundamental difference between an arithmetic series and a geometric series?

Bronze



a) The first number of an arithmetic sequence is 4. The difference is 6.
State the 50th number in the sequence (using the formula).

b) Find the sum of the first 15 numbers (using the formula).

Bronze


a) The first number of an geometric sequence is 3. The ratio is 2.
State the 6th number in the sequence (using the formula).

b) Find the sum of the first 6 numbers (using the formula).

Bronze


Core 4 - Bronze Topic: Sequences and Series

Question 4

Coby is looking at investing £3,000 in either of these two bank accounts.

Cash account

Compound Interest
3.5% per annum
for 4 years

Shares account

Compound Interest
4% for year 1
5% for year 2
5% for year 3

Which bank will give Coby the most interest at the end of their terms?

Bronze



Calculator

Core 5 - Bronze Topic: Sequences and Series

Question 5

Henry invests £4,500 at a compound interest rate of 5% per annum.

At the end of n complete years, the investment has grown to £5743.27. Find the value of n .

Bronze



Calculator

Core 6 - Bronze Topic: Sequences and Series

Question 6

Natalie invests £5,500 for 5 years. The investment gets compound interest of x % per annum. At the end of 5 years the investment is worth £7029.35

Calculate the value of x (Give your answer to 2 decimal places).

Bronze



Calculator

Core 7 - Silver Topic: Sequences and Series

a) Find the first term and the common difference of an arithmetic progression whose 4th term is 25 and the 7th term is 43.

Silver



Core 8 - Silver Topic: Sequences and Series

a) The third and fifth terms of Geometric Progression (G.P.) are 32 and 128 respectively. Find the common ratio and the first term of the G.P.



Core 9 - Silver Topic: Sequences and Series

a) How many terms of the series 7,11,15 are needed to make a sum of 168.



- a) If the sum of n terms of a geometric progression with first term 4 and common ratio $1/4$ is $21\frac{1}{4}$, find the number of terms in the sequence.

Gold

- a) Given that 16, x , 169 are consecutive terms of a geometric progression. Find
- i) the value of x
- (ii) the geometric mean

Gold

a) The 5th term of an arithmetic progression is 21 greater than the 2nd term. The 10th term is 15 times the 2nd term. Find the common difference and the first term of the arithmetic progression.

Platinum





CSEE- Basic Maths

Trigonometry & Pythagoras

Questions and Answers

Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic:

Trigonometry & Pythagoras

Section A

Lesson 10 (Revision Week 4)

Instructions: Complete this worksheet and watch this revision video simultaneously on

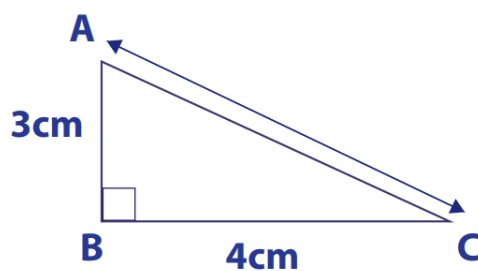
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Pause and Play the video unlimited times to review your work and write the answers in the blank spaces. Once you have written your answers, check these with the tutorial answers, as explained in the video.

Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

Question 1

ABC is a right angle triangle
Find the unknown length AC



Bronze



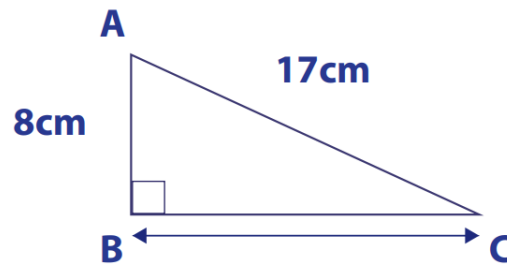
Calculator

Core - Bronze

Topic: Trigonometry & Pythagoras' Theorem

Question 2

ABC is a right angle triangle
Find the unknown length BC



Bronze



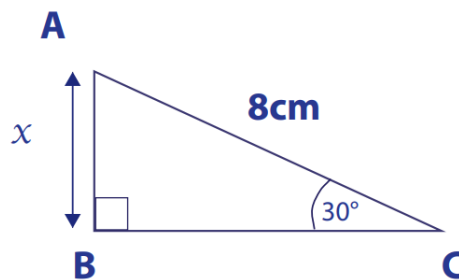
Calculator

Core 3 - Bronze

Topic: Trigonometry & Pythagoras' Theorem

Question 3

ABC is a right angle triangle
Find the unknown length AB



3. Apply ONE (below)

2.



1. Label sides(H,O,A)

Bronze



Calculator

Core 4 - Bronze

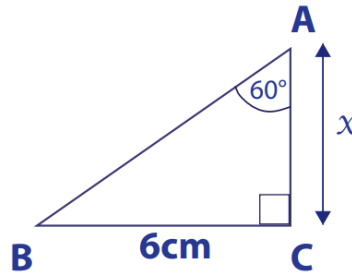
Topic: Trigonometry & Pythagoras' Theorem

Question 4

ABC is a right angle triangle

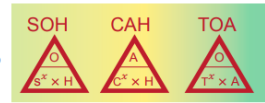
Find the unknown length AC

Give your answer to 3 significant figures.



3. Apply ONE (Below)

2.



1. Label sides (H, O, A)

Bronze



Calculator

Core 5 - Bronze

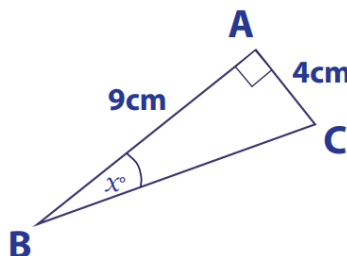
Topic: Trigonometry & Pythagoras' Theorem

Question 5

ABC is a right angle triangle.

Find the unknown angle $\hat{ABC}$

Give your answer to 3 significant figures.



3. Apply ONE

2.



1. Label sides (H, O, A)

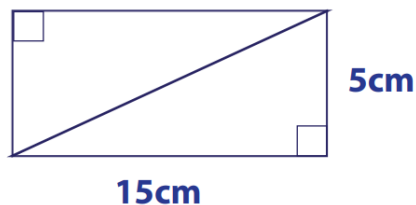
Bronze



Calculator

Question 6

This rectangular frame is made from 5 straight pieces of metal.



The weight of the metal is 2.5 Kg per metre.

Work out the total weight of the metal in the frame (give your answer in grams).

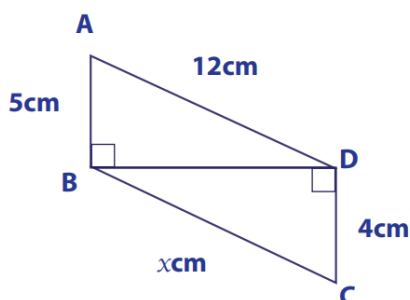
SILVER



Calculator

Question 7

Triangles ABD and BCD are right angles triangles.



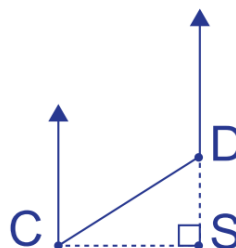
Work out the value of x . Give your answer to 3 significant figures.

SILVER



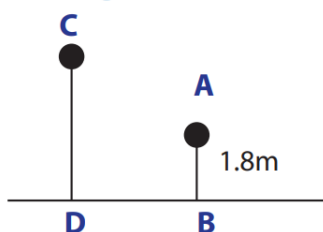
Calculator

The diagram show two towns C and D.
Ship S is exactly 5 km due east of town C
and exactly due south of town D.
Town C is on a bearing of 215° from town D.
Find the distance, ship S is due south of town D.



Calculator

The diagram shows two lamp posts, AB and CD on a horizontal ground.



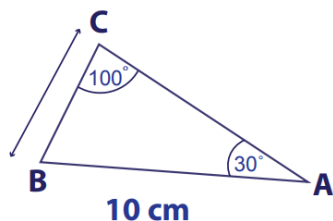
$AB = 1.8\text{m}$
 $CD : AB = 2.5 : 1$
 The angle of elevation of C from A is 55°
 Calculate the length of BD.
 Give your answer to 3 significant figures.



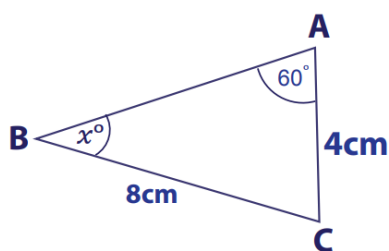
Calculator

Question 10

a) Calculate the unknown length BC



b) Calculate the unknown angle ABC



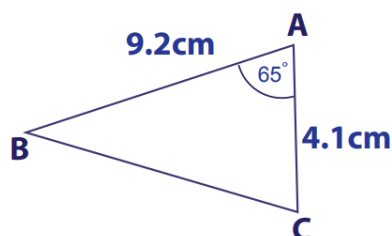
SILVER



Calculator

Question 11

Calculate the area of triangle ABC



SILVER



Calculator

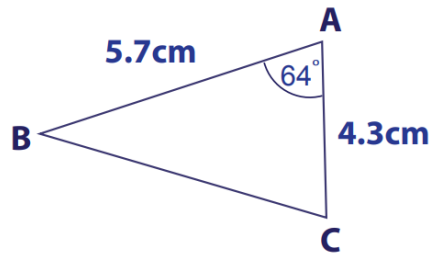
Core - Silver

Topic: Trigonometry &
Pythagoras' Theorem

Core 11 - Silver Topic: Trigonometry &
Pythagoras' Theorem

Question 12

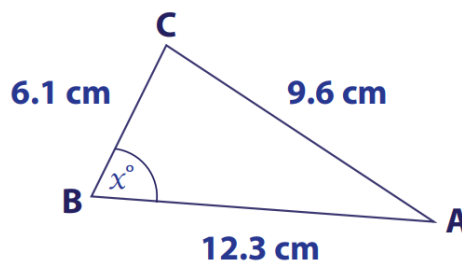
Calculate the length BC.



SILVER
Calculator

Question 13

Calculate the angle ABC.



SILVER
Calculator

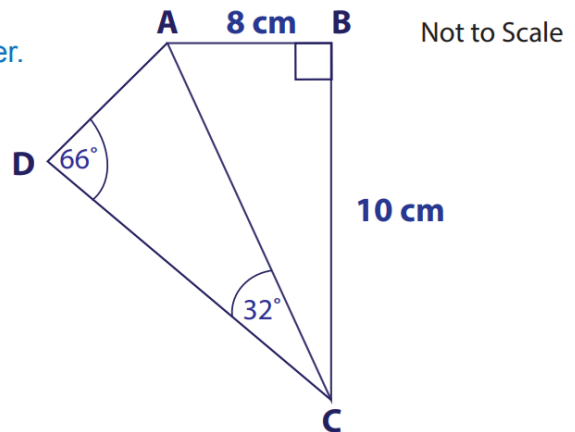
Question 14

The diagram shows two triangles adjoined to one another.

$AB = 8\text{ cm}$ $BC = 10\text{ cm}$

Angle $ADC = 66^\circ$ Angle $DCA = 32^\circ$

Calculate the length AD



Gold



Calculator

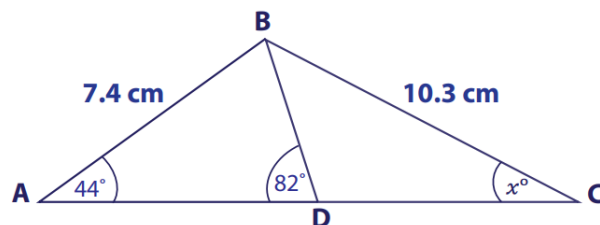
Question 15

ABC is a triangle. D is a point on line AC

$AB = 7.4\text{ cm}$ and $BC = 10.3\text{ cm}$

Angle $BAD = 44^\circ$ Angle $BDA = 82^\circ$

Calculate the angle DCB



Gold

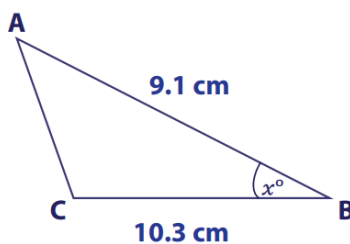


Calculator

Question 16

The area of the triangle ABC is 22cm^2
 $AB = 9.1\text{cm}$ $CB = 10.3\text{cm}$

Calculate the angle ABC



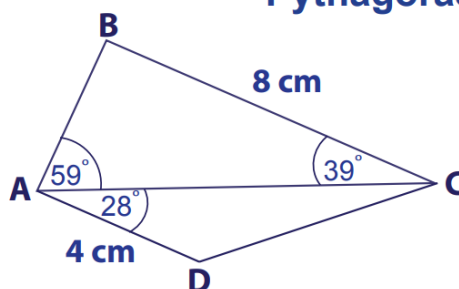
Gold



Calculator

Question 17

The shape shows triangles ABC and ADC
 Angle BAC = 59° Angle BCA = 39° Angle DAC = 28°
 $BC = 8\text{cm}$ and $AD = 4\text{cm}$
 Calculate length DC



Gold



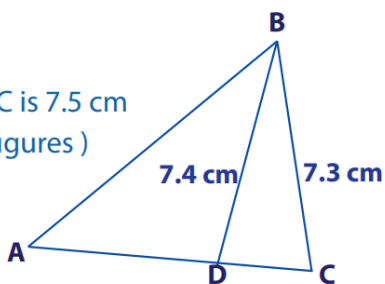
Calculator

Question 18

ABC is a triangle. BC is 7.3 cm. BD is 7.4 cm

The straight line AC is such that AD: DC = 2:1. AC is 7.5 cm

Calculate the length AB. (Write to 3 significant figures)



Platinum



Calculator



CSEE- Basic Maths

Quadratic Equations

Questions and Answers

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Revision Topic: Quadratic Equations

Section A

Lesson 11: (Revision Week 4)

Instructions: Complete this worksheet and watch this revision video simultaneously on

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Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .



Question 1

a) Factorise $12x^2 + 15x$

b) Factorise $18x^2y^3 - 12xy^2$

Bronze





Question 2

Simplify

a) $\frac{x^2 + x - 12}{x^2 - 9}$

Core 2 - Bronze Topic: Quadratic Equations

Bronze



Question 3

Simplify

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

Core 3 - Bronze Topic: Quadratic Equations

Bronze



Question 4

Simplify

$$\frac{1}{x} + \frac{2}{x^2}$$

Bronze



Question 5

a) Factorise $3x^2 + 4x - 4$

Hence solve $3x^2 + 4x - 4 = 0$

b) Solve $6x^2 - 7x - 3 = 0$

c) Solve $8x^2 - 12x$

SILVER



Question 6

Solve

$$x^2 + 2x - 1 = 0$$

Give your solutions correct to 3 significant figures.

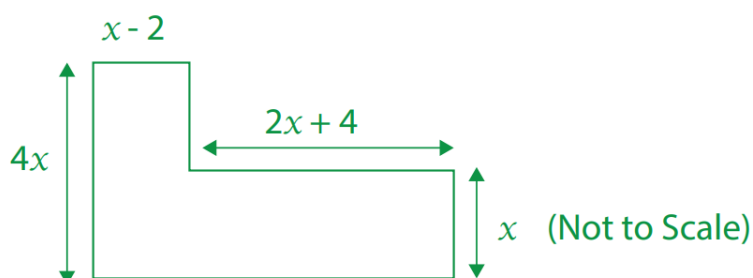


Calculator

Question 7

The area of the shape is 40cm^2 .

a) Show that $3x^2 - 2x - 20 = 0$.



b) Solve $3x^2 - 2x - 20 = 0$.

Give your solutions correct to 3 significant figures.

c) Hence, work out the shortest side.



Calculator

Solve

$$\frac{x}{2} - \frac{2}{x+3} = 4$$

Write answer to 3 significant figures.



Calculator

a) Write $x^2 - 3x - 2$ in the form $(x + p)^2 + q$

b) Hence find the roots of $x^2 - 3x - 2 = 0$. Give your answer in surd form.



Question 10

- a) Find two consecutive even numbers whose product is 168.



Question 11

- a) The sum of the squares of two consecutive positive numbers is 41. Find the numbers.



Question 12

Sam is five years younger than Joanne. In 2 years to come, the product of their ages will be 126 years.

Formulate a quadratic equation representing this information and present their ages.

Work out their ages

Sam:_____

Joanne :_____



Question 13

a) Two numbers differ by 4.If the sum of their reciprocals is $\frac{2}{3}$, find the numbers.



Question 14

a) Two numbers differ by 4. If the sum of their reciprocals is $\frac{2}{3}$, find the numbers.

Platinum





CSEE- Basic Maths

Statistics

Questions and Answers

Videos with expert tutorials on each topic

CSEE Basic Maths

Revision Topic: Statistics

Section B

Lesson 12: (Revision Week 5)

Instructions: Complete this worksheet and watch this revision video simultaneously on

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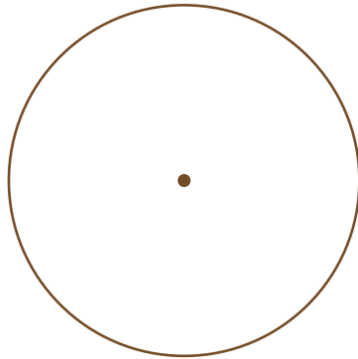
Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

Question 1

The table below shows information about the hobbies of 30 students in their final year.

Hobbies	Number of Students	
Football	8	
Netball	11	
Cricket	4	
Tennis	7	

Draw an accurate pie chart to represent this information.



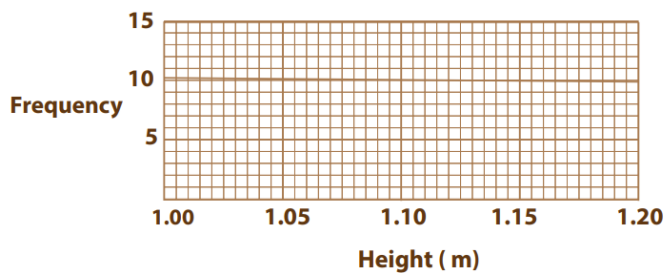
Bronze

Question 2

The table below shows information about the heights of 40 primary school pupils.

Heights (m)	Frequency
$1.00 < h \leq 1.05$	12
$1.05 < h \leq 1.10$	15
$1.10 < h \leq 1.15$	8
$1.15 < h \leq 1.20$	5

a) Draw a frequency polygon for the information in the table.



Bronze



Question 3

The table below shows information about the shoe size's taken from a primary school class.

Shoe Size	Frequency
1	12
2	17
3	6
4	5

a) Find the modal shoe size.

b) Find the median shoe size.

c) Find the mean shoe size.

Bronze



Question 4

The table below shows information about the time it took a class of pupils to complete a puzzle.

Time (minutes)	Frequency
$0 < x \leq 10$	6
$10 < x \leq 20$	13
$20 < x \leq 30$	12
$30 < x \leq 40$	9

a) Work out an estimate for the mean time.

b) Find the class interval that contains median.

SILVER



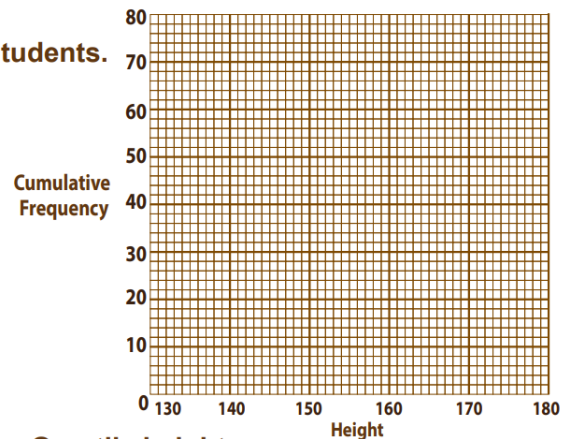
Calculator

Question 5

The table below shows information about the heights of 80 students.

a) Draw a cumulative frequency graph from the table.

Height (h cm)	Number of Students
$130 < h \leq 140$	8
$140 < h \leq 150$	11
$150 < h \leq 160$	23
$160 < h \leq 170$	32
$170 < h \leq 180$	6



Use your graph to estimate the following :

b) Median height

c) Lower Quartile height

d) Upper Quartile height

e) Interquartile range

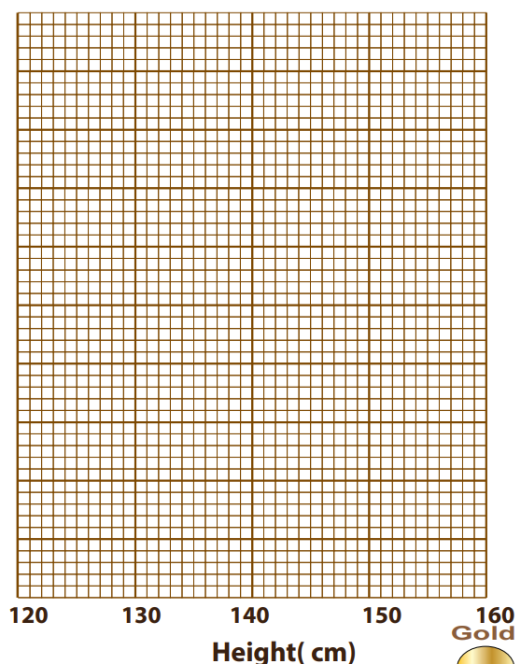
SILVER



The frequency table below shows the heights of 30 students.

Height (cm)	Frequency
$120 < h \leq 130$	9
$130 < h \leq 135$	3
$135 < h \leq 140$	4
$140 < h \leq 160$	14

Frequency
Density

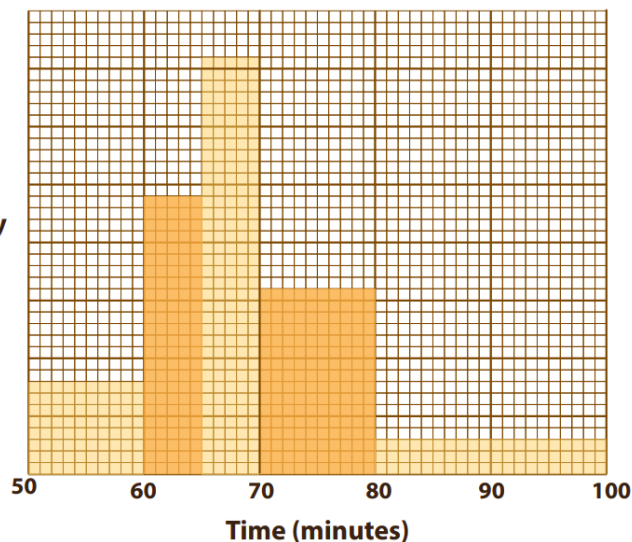


- a) On the grid, represent this information on a histogram.
- b) Work out an estimate for the fraction of students who have a height between 130 - 140 cm.

The histogram shows information about the time taken by athletes to complete a race(minutes)

- a) 8 athletes took 60 minutes or less to complete the race.
Calculate the median (2 decimal places)

Frequency
Density



Platinum



CSEE- Basic Maths

3-D Figures/ Circles

Questions and Answers

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CSEE Basic Maths

Revision Topic: 3 – D Figures/ Circles

Section: B

Lesson 13 (Revision Week 5)

Instructions: Complete this worksheet and watch this revision video simultaneously on

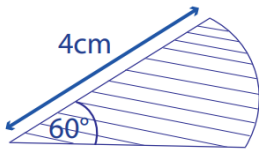
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Pause and Play the video unlimited times to review your work and write the answers in the blank spaces. Once you have written your answers, check these with the tutorial answers, as explained in the video.

Self Assess yourself (Out of 10) on your **revision planner** after you have completed the revision video .

Question 1

Calculate the perimeter of this sector to 2 decimal places.



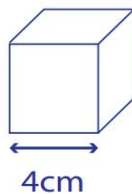
Bronze



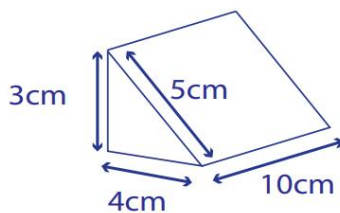
Calculator

Question 2

a) Find the surface area of a cube of side length 4 cm.



b) Find the surface area of this triangular prism.



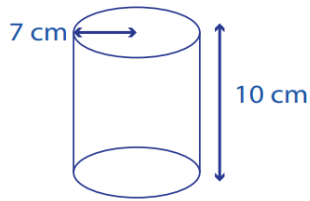
Bronze



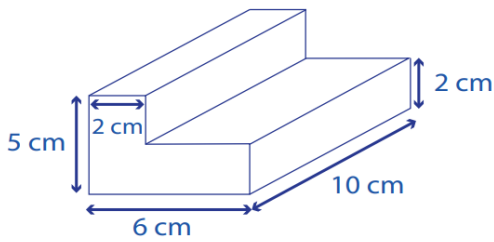
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Question 3

a) Calculate the volume of this cylinder



b) Calculate the volume of this shape.



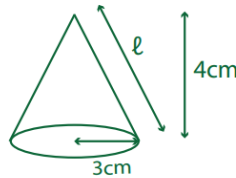
Bronze

Question 4

a) Find

i) Surface Area _____

ii) Volume _____



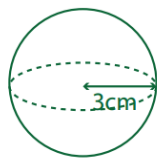
$$\text{Volume of cone} = \frac{1}{3} \pi r^2 h$$

$$\text{Surface Area of cone (curved)} = \pi r l$$

b) Find

i) Surface Area _____

ii) Volume _____



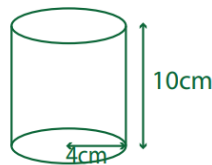
$$\text{Surface Area of sphere} = 4\pi r^2$$

$$\text{Volume of sphere} = \frac{4}{3} \pi r^3$$

c) Find

i) Surface Area _____

ii) Volume _____

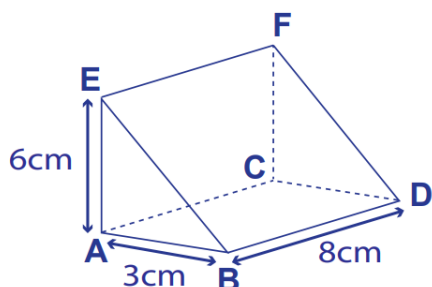


Silver

Calculator

Question 5

The diagram shows a triangular prism..



Find

a) Length CB (3 s.f.)

b) Length BF (3 s.f.)

c) Angle $\widehat{FBC}$ (3 s.f.)



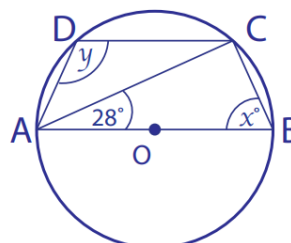
Calculator

Question 6

a) ABCD are points on the circumference, centre O.
AOB is a diameter of a circle. Angle CAB = 28° .

i) $x =$ ____ Reason _____

ii) $y =$ ____ Reason _____

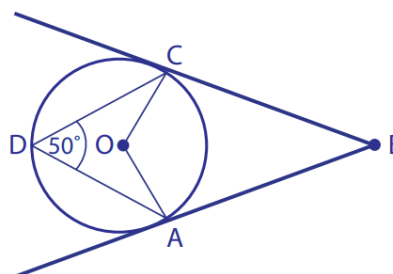


b) ACD are points on the circumference, centre O.
AB and CB are tangents. Angle ADC = 50° .

i) Angle AOC = ____ Reason _____

ii) Angle ABC = ____ Reason _____

iii) Angle CAB = ____ Reason _____

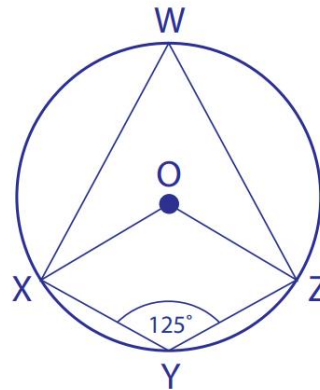


Question 7

WXYZ are points on the circumference, centre O.

Angle XYZ = 125° . $XY = YZ$

Find angle XOZ. Show your working.



Silver

Question 8

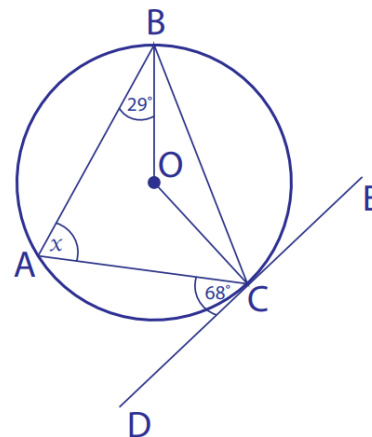
ABC are points on the circumference, centre O.

DCE is a tangent to the circle.

Angle ABO = 29° .

Angle DCA = 68° .

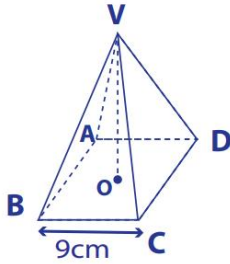
Find angle BAC. Show your working.



Silver

Question 9

The diagram shows square based pyramid ABCD and vertex V.



The angle that face VCD makes with the square base ABCD is 53° .

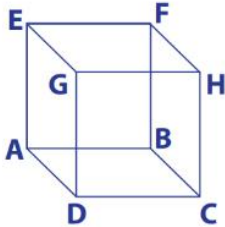
- Calculate the height of the pyramid.
- Length of VD.



Calculator

Question 10

ABCDEFGH is a cube.



$AB = 7.2\text{cm}$,

N is a point on BC such that $BN:NC = 4:5$

- Calculate angle FNA (3 s.f.)
- M is a midpoint on FG. Given that $\angle MNA = 71^\circ$ and angle MAN is 73° , calculate length MN (3 s.f.)

100% 100% 100% 100%

Calculator