

Mid-Year 10 Review – additional questions.

The total mark is [50]

The following Questions have been selected from past GCSE examination papers. You may use a calculator with all of them if you wish.

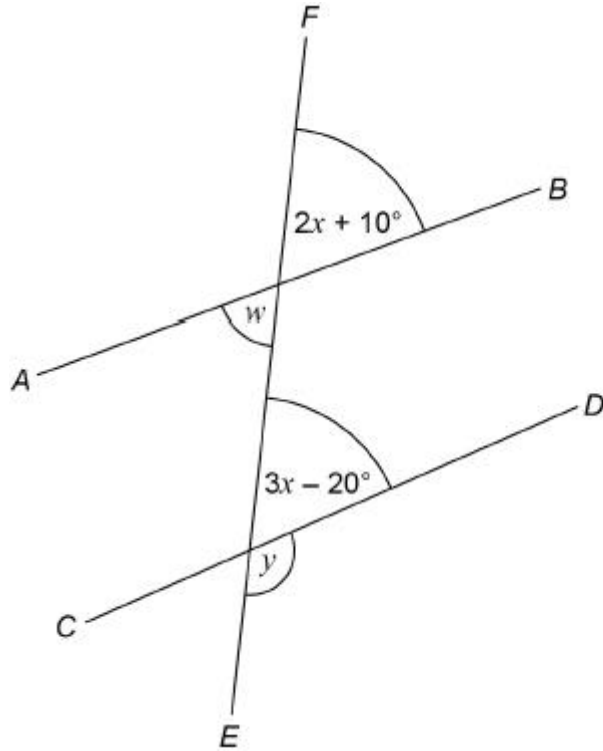
They are in roughly the same order as the topics on your Mid-Year 10 Exam Review sheet. Attempt first those which you have identified as needing to revise and then the rest.

Use your notes to help you and if you needed a key facts or process add it to the list of things you need to learn.

Geometry	
Angles in Polygons	<input type="checkbox"/>
Angle facts - for triangles, quadrilaterals and parallel lines	<input type="checkbox"/>
Area of a 2D shape including circles and fractions of a circle.	<input type="checkbox"/>
Congruence & similarity	<input type="checkbox"/>
Pythagoras	<input type="checkbox"/>
SOH CAH TOA	<input type="checkbox"/>
Transformations - translation, rotation, reflection, enlargement	<input type="checkbox"/>
Volume of a prism	<input type="checkbox"/>
Data Handling	
Histograms	<input type="checkbox"/>
mean, median, mode and range	<input type="checkbox"/>
Representing data - pie charts, bar charts	<input type="checkbox"/>
Number	
+ - \times \div with decimals, negatives, fractions & mixed numbers	<input type="checkbox"/>
Factors	<input type="checkbox"/>
FDP conversion	<input type="checkbox"/>
Powers & roots	<input type="checkbox"/>
Percentages	<input type="checkbox"/>
repeating decimals	<input type="checkbox"/>
rounding	<input type="checkbox"/>
surds	<input type="checkbox"/>
Algebra	
algebraic fractions	<input type="checkbox"/>
algebraic notation	<input type="checkbox"/>
Equations - linear	<input type="checkbox"/>
expanding & factorising	<input type="checkbox"/>
expressions - simplifying	<input type="checkbox"/>
Indices	<input type="checkbox"/>
Sequences - linear	<input type="checkbox"/>
Simultaneous equations	<input type="checkbox"/>
Ratio & Proportion	
percentage change	<input type="checkbox"/>
ratio	<input type="checkbox"/>

Q1.

AB, *CD* and *EF* are straight lines.



Not drawn accurately

- (a) Ava assumes that *AB* and *CD* are parallel.
What answer should she get for the size of angle *y*?

Answer _____ degrees

(4)

- (b) In fact,
AB and *CD* are **not** parallel
angle *w* is 60°

What effect does this have on the size of angle *y*?

Tick a box.

y is bigger

y is the same

y is smaller

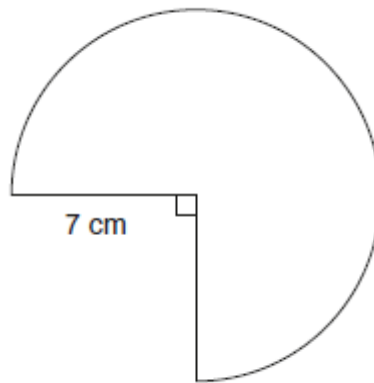
Show working to support your answer.

(3)
(Total 7 marks)

Q2.

The diagram shows a sector of a circle.
The radius is 7 cm

Not drawn accurately



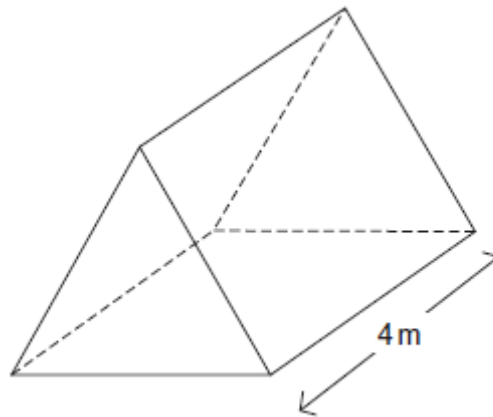
Work out the **perimeter** of the shape.

Answer _____ cm

(Total 3 marks)

Q3.

A tent is in the shape of a triangular prism.



The length of the tent is 4 metres.
The volume is 8 m^3

The cross-section of the tent is an **equilateral** triangle.

Shaun is 1.95 metres tall.

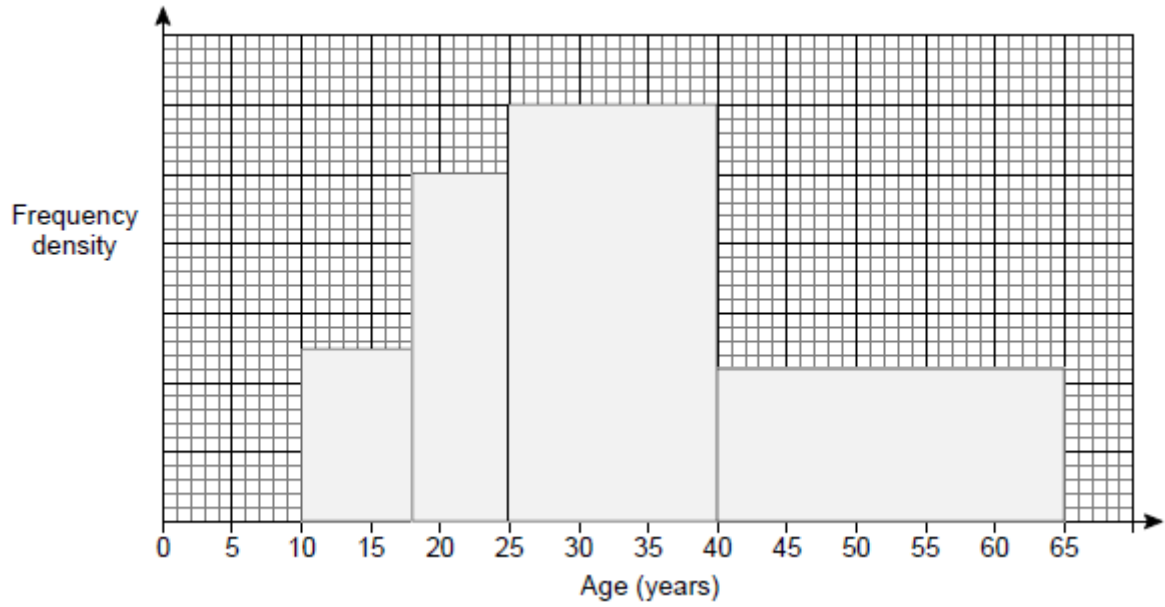
Can he stand at the highest part of the tent without having to bend over?
You **must** show your working.

Answer _____

(Total 5 marks)

Q4.

The histogram shows the ages, in years, of members of a chess club.



There are 22 members with ages in the range $40 \leq \text{age} < 65$

Work out the number of members with ages in the range $25 \leq \text{age} < 40$

Answer _____

(Total 4 marks)

Q5.

Here is some information about the number of books read by a group of people in 2014

One of the frequencies is missing.

Number of books	Frequency	Midpoint	
0 – 4	16	2	
5 – 9		7	
10 – 14	20	12	
15 – 19	10	17	

Midpoints are used to work out an estimate for the mean number of books read.

The answer is 8.5

Work out the missing frequency.

Answer _____

(Total 5 marks)

Q6.

- (a) Write $\frac{7}{13}$ as a recurring decimal.

Answer _____

(1)

- (b) Circle the fraction that is equivalent to $0.\overline{41}$

$$\frac{41}{99}$$

$$\frac{41}{100}$$

$$\frac{37}{99}$$

$$\frac{37}{90}$$

(1)

(Total 2 marks)

Q7.

- (a) Factorise $49c^2 - d^2$

Answer _____

(2)

- (b) Simplify $\frac{x^2 - 6x}{2x^2 - 7x - 30}$

Answer _____

(3)

(Total 5 marks)

Q8.

Solve the simultaneous equations

$$3x + 2y = 10$$

$$3x - y = 13$$

Answer $x = \dots\dots\dots$ $y = \dots\dots\dots$

(Total 3 marks)

Q9.

Solve the following equations.

Do **not** use trial and improvement.

(a) $\frac{x}{5} + 2 = x$

$x = \underline{\hspace{10em}}$

(3)

(b) $\frac{2y - 3}{4} + \frac{y - 4}{3} = 1$

y = _____

(4)

(Total 7 marks)

Q10.

I increase a number by 24%
The answer is 6014.

What number did I start with?

Answer _____

(Total 3 marks)

Examiner reports

Q1.

This question was not well answered and had a significant number of non-attempts. In part (a) common errors were: failing to equate the two algebraic terms to form a correct equation, incorrect manipulation in attempting to solve the equation, not equating the two angles as corresponding but adding them to 180 instead.

In part (b) very few candidates set up the initial equation $60 = 2x + 10$, and so were unable to progress further. In part (b), many continued with the assumption that the lines were parallel and gave $3x - 20 = 60$.

Q2.

Approximately half of all students correctly worked out the arc length but many did not add on the lengths of the two radii. The other common error was to use the area formula for the sector.

Q3.

This problem solving question proved difficult for almost all students with only a small number obtaining a correct solution. Many students stated that the area of the cross-section was 2 m², but then assumed that a side or a height was 2 metres. Some

attempted to use Pythagoras' theorem but used $\frac{x^2}{2}$ instead of $\frac{x^2}{4}$. Some students started from the assumption the height of the tent was 1.95 metres and attempted to use trigonometry but were unable to communicate their answers effectively.

Q6.

Just over half of students correctly answered part (a) but more were successful in part (b)

Q7.

Part (a) was not well answered. Students appear to have more difficulty when the first coefficient is not 1. An answer of $49(c - d)(c + d)$ was quite common. In part (b) only a minority of students had any success. Many students had more success with factorising the denominator than the numerator.

Q9.

Both parts were not well answered. In part (a) there were two main errors. Students who multiplied by 5 did not multiply the 2. Students who tried to combine the fractions did not manage to do this accurately.

In part (b) the two steps are to obtain the numerator of the left hand side and put the resulting expression equal to 12. Although many students attempted to find the numerator, fewer put the expression equal to 12.

Q10.

For those students who recognised this as a reverse percentage problem it was a relatively straightforward process to give a fully correct solution. However, many students worked out 24% of 6014 and then subtracted it.