

## Year 9 higher passport to success - due

Question 1 - ( 2 marks available )

Find the Highest Common Factor of 18 and 12.

Question 2 - ( 1 marks available )

Find the Lowest Common Multiple of 8 and 6.

Question 3 - ( 3 marks available )

Ken and Hamid run around a track.

It takes Ken 80 seconds to complete a lap.

It takes Hamid 60 seconds to complete a lap.

Ken and Hamid start running at the same time from the start line.

How many laps will they each have run when they next meet on the start line?

Question 4 - ( 3 marks available )

Express 160 as the product of its prime factors.  
Write the prime factors in ascending order and  
give your answer in index form.

Question 5 - ( 4 marks available )

Expand the following:

a)  $x(x + 2)$

b)  $x(2x - 5)$

c)  $2x(3x + 4)$

d)  $6x(x - 2y)$

Question 6 - ( 2 marks available )

Expand and simplify  $3(x - 2) + 2(4x - 1)$

Question 7 - ( 2 marks available )

Expand and simplify  $(3x + 4)(2x + 3)$

Question 8 - ( 4 marks available )

Factorise fully the following:

a)  $x^2 + 2x$

b)  $2x^2 - 6x$

c)  $15x - 10x^3$

d)  $9x^2 + 3x^3$

Question 9 - ( 6 marks available )

Solve the following:

a)  $2(x + 3) = x - 4$

b)  $4(5x - 2) = 2(9x + 3)$

Question 10 - ( 4 marks available )

a) Round 4382 to 1 significant figure.

b) Round 25446 to 1 significant figure.

c) Round 38562.7 to 1 significant figure.

d) Round 87600.2 to 1 significant figure.

Question 11 - ( 2 marks available )

Find the **upper bound** for the following lengths:

a) 60 cm measured to the nearest cm.

b) 96.3 cm measured to the nearest tenth of a cm.

Question 12 - ( 2 marks available )

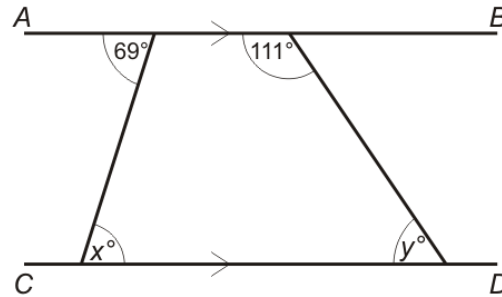
A number,  $x$ , rounded to 1 decimal place is 3.7  
Write down the error interval for  $x$ .

Question 13 - ( 3 marks available )

$AB$  is parallel to  $CD$ .

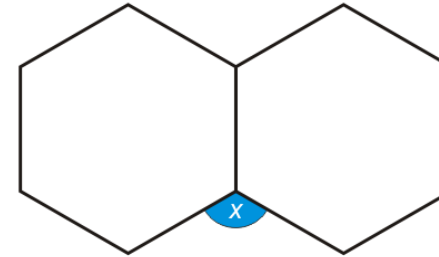
a) Find the value of angle  $x$ .

b) Work out the value of angle  $y$ .



Question 14 - ( 3 marks available )

Two identical hexagons are joined together as shown on the diagram.



Work out the size of angle  $x$ .

Question 15 - ( 2 marks available )

Work out

a)  $1\frac{1}{5} + 3\frac{2}{5}$

b)  $4\frac{1}{2} - 1\frac{1}{3}$

*Note: To enter a mixed number in the answer boxes, please use the following method:*

*Type the fractional part of the mixed number first (e.g. for  $6\frac{1}{5}$  first enter  $\frac{1}{5}$  )*

*Then use the keyboard arrows to return to the front of the box and type the whole number (e.g. for  $6\frac{1}{5}$  enter 6).*

Question 16 - ( 4 marks available )

Harry buys a TV priced at £1200 plus 20% VAT.

He pays £300 deposit and the balance in ten equal monthly payments.

Calculate each monthly payment.

Question 17 - ( 2 marks available )

Hamid has gained weight.  
He now weighs 88 kg, which is 10% higher than his normal weight.

What is Hamid's normal weight?

Question 18 - ( 3 marks available )

a) Divide 260 in the ratio 1 : 3

:

b) The ratio 3 : 5 can be written in the form 1 :  $n$

Choose  $n$  from the following.

$\frac{5}{3}$	$\frac{1}{5}$	$\frac{3}{5}$	$\frac{1}{3}$
A	B	C	D

Question 19 - ( 3 marks available )

$y$  is directly proportional to  $x$ .

When  $y = 30$ ,  $x = 6$

a) Work out an equation connecting  $y$  and  $x$ .

b) Work out the value of  $y$  when  $x = 12$ .

Question 20 - ( 3 marks available )

$Y$  is inversely proportional to  $X$ .

When  $X = 3$ ,  $Y = 8$

Work out the value of  $Y$  when  $X = 8$ .

Question 21 - ( 3 marks available )

Harry invests £6000 in a savings account.  
The account pays 3.4% compound interest per year.

Work out the value of his investment after 3 years.  
Give your answer to the nearest penny.

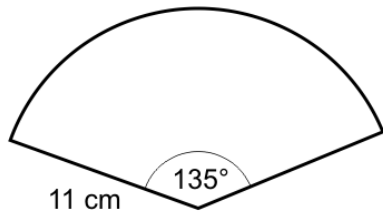
Question 22 - ( 3 marks available )

At the start of 2014 Mike's car was worth £12000.  
The value of the car decreased by 30% every year.

Work out the value of his car at the start of 2017.

Question 23 - ( 3 marks available )

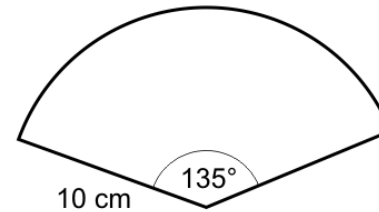
The diagram shows a sector of a circle radius 11 cm.



Show that the perimeter of the sector is greater than 47.5 cm.

Question 24 - ( 3 marks available )

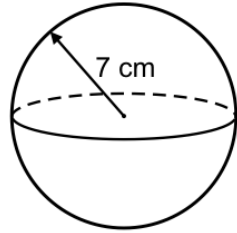
The diagram shows a sector of a circle radius 10 cm.



Find the area of the sector, giving your answer correct to 1 decimal place.

Question 25 - ( 2 marks available )

Work out the volume of this sphere.  
Give your answer to 1 decimal place.



Spheres  
 $\text{Vol} = \frac{4}{3}\pi r^3$

Question 26 - ( 3 marks available )

Find the exact values of the following, giving your answers as fractions.

- a)  $3^{-2}$
- b)  $4^{-3}$
- c)  $2^{-6}$

Question 27 - ( 2 marks available )

Evaluate  $64^{\frac{1}{2}} \times 10^{-2}$

Give your answer as a fraction in its simplest form.

Question 28 - ( 3 marks available )

a) Write  $5.1 \times 10^{-1}$  as an ordinary number.

b) Work out the value of  $(1.7 \times 10^4) \times (8.5 \times 10^{-2})$   
Give your answer in standard form.

Question 29 - ( 3 marks available )

Write

$$\sqrt{99} + \sqrt{44}$$

in the form  $a\sqrt{b}$

where  $a$  and  $b$  are integers.

Question 30 - ( 4 marks available )

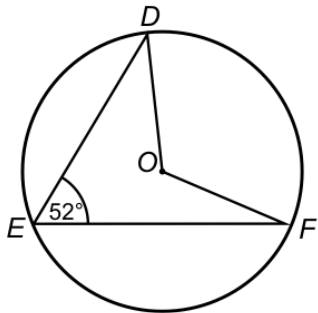
Rationalise the denominator and simplify

a)  $\frac{1}{\sqrt{5}}$

b)  $\frac{5}{\sqrt{3}}$

Question 31 - ( 2 marks available )

Work out the size of obtuse angle  $DOF$ , giving a reason for your answer.



Question 32 - ( 2 marks available )

Work out the size of angle  $EFG$ , giving a reason for your answer.

