

Answer ALL TWENTY TWO questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 (a) Write down the value of  $m$ , given that  $3^4 \times 3^5 = 3^m$

$$m = \dots\dots\dots (1)$$

- (b) Write down the value of  $n$ , given that  $(5^3)^7 = 5^n$

$$n = \dots\dots\dots (1)$$

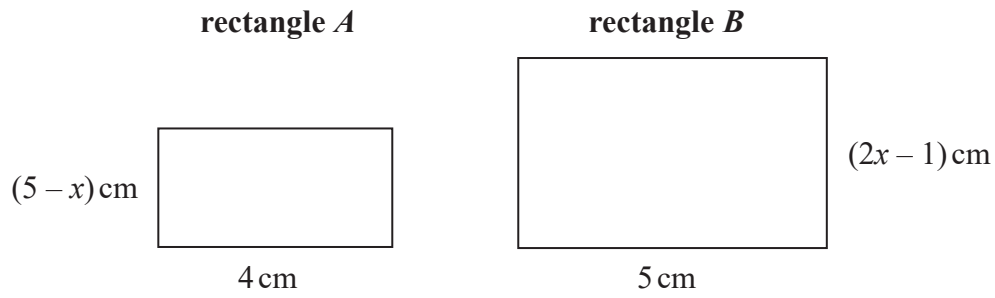
- (c) Find the value of  $p$ , given that  $\frac{7^8 \times 7^2}{7^p} = 7^6$

$$p = \dots\dots\dots (2)$$

(Total for Question 1 is 4 marks)



2 Here are two rectangles, rectangle  $A$  and rectangle  $B$ .



The area of rectangle  $B$  is twice the area of rectangle  $A$ .

Work out the value of  $x$ .  
Show your working clearly.

$x = \dots\dots\dots$

**(Total for Question 2 is 4 marks)**

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- 3 The table gives information about the amounts of money, in euros, that 70 of Anjali's friends spent last Saturday.

Money spent ( $S$ euros)	Frequency
$0 < S \leq 8$	6
$8 < S \leq 16$	14
$16 < S \leq 24$	19
$24 < S \leq 32$	25
$32 < S \leq 40$	6

One of Anjali's 70 friends is going to be chosen at random.

- (a) Find the probability that this friend spent more than 24 euros last Saturday.

.....  
(1)

- (b) Work out an estimate for the mean amount of money spent by Anjali's friends last Saturday.  
Give your answer correct to 2 decimal places.

..... euros  
(4)

(Total for Question 3 is 5 marks)



4  $ABC$  and  $DEF$  are similar triangles.

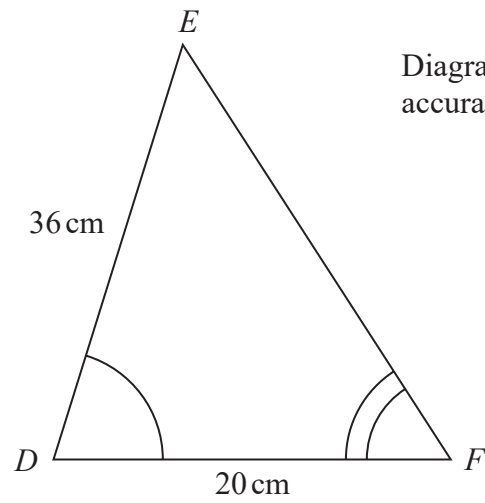
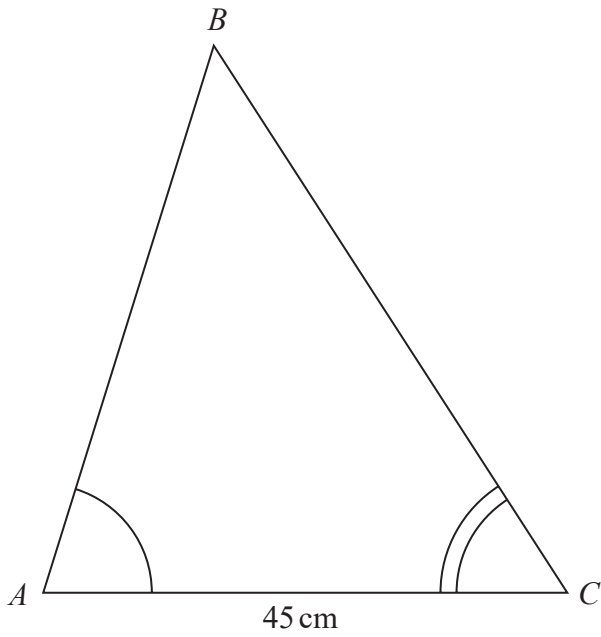


Diagram NOT accurately drawn

(a) Work out the length of  $AB$ .

..... cm  
(2)

Given that  $BC = 54\text{ cm}$ ,

(b) work out the length of  $EF$ .

..... cm  
(2)

(Total for Question 4 is 4 marks)



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5 The diagram shows a regular octagon  $ABCDHIJK$  and a pentagon  $DEFGH$ .

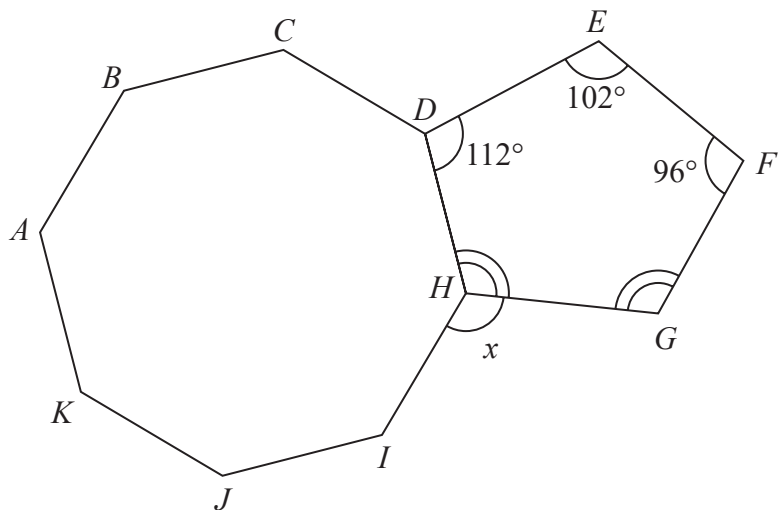


Diagram **NOT** accurately drawn

Angle  $GHD =$  angle  $FGH$ .

Work out the size of the angle marked  $x$ .  
Show your working clearly.

(Total for Question 5 is 5 marks)



P 6 5 9 1 9 R A 0 7 2 8

- 6 Victor buys 12 bottles of apple juice for a total cost of \$21  
Victor sells all 12 bottles at \$2.45 each bottle.

Work out Victor's percentage profit.

.....%

**(Total for Question 6 is 3 marks)**

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7 Ali and Badia each have 25 000 dollars to invest.

<b>Cyclone Bank</b>	<b>Tornado Bank</b>
Invest 25 000 dollars 4.5% compound interest per year for 3 years	Invest 25 000 dollars Receive 1150 dollars interest each year for 3 years

Ali invests in the Cyclone Bank for 3 years.  
Badia invests in the Tornado Bank for 3 years.

By the end of the 3 years, Ali will have received more interest than Badia.

How much more?  
Show your working clearly.  
Give your answer correct to the nearest dollar.

..... dollars

**(Total for Question 7 is 4 marks)**



8 (a) Simplify  $(3x^2y)^0$

.....  
(1)

(b) (i) Factorise  $x^2 - 5x - 36$

.....  
(2)

(ii) Hence solve  $x^2 - 5x - 36 = 0$

.....  
(1)

**(Total for Question 8 is 4 marks)**

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