

# COUNTDOWN TO YOUR FINAL MATHS EXAM ...

## PART 4 (2017)

	Marks	Actual	  
Q1. Pythagoras' Theorem	<b>3</b>		
Q2. Pythagoras' Theorem	<b>4</b>		
Q3. Percentages	<b>5</b>		
Q4. Pythagoras' Theorem	<b>3</b>		
Q5. Pythagoras' Theorem	<b>5</b>		
Q6. Numerical Reasoning	<b>5</b>		
Q7. Pythagoras' Theorem	<b>7</b>		
Q8. Pythagoras' Theorem	<b>5</b>		
Q9. Proportional Reasoning	<b>2</b>		
Q10. Pythagoras' Theorem	<b>5</b>		
Q11. Pythagoras' Theorem	<b>4</b>		
Q12. Fractions/Profit	<b>5</b>		
Q13. Pythagoras' Theorem	<b>5</b>		
Q14. Pythagoras' Theorem	<b>4</b>		
Q15. Rounding and estimating	<b>4</b>		
Q16. Reverse mean	<b>3</b>		
Q17. Fraction addition and division	<b>7</b>		
Q18. Proportional reasoning	<b>4</b>		

**Q1.**  $GHJ$  is a right-angled triangle.

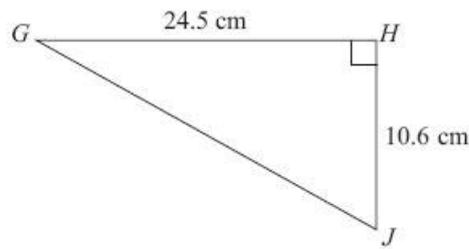


Diagram NOT accurately drawn

Calculate the length of  $GJ$ .  
Give your answer correct to one decimal place.

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

**Q2.** Triangle  $ABC$  has perimeter 20 cm.

$AB = 7$  cm.  
 $BC = 4$  cm.

By calculation, deduce whether triangle  $ABC$  is a right-angled triangle.

**(Total for question = 4 marks)**

**Q3.** A and B are two companies.

The table shows some information about the sales of each company and the number of workers for each company in 2004 and in 2014

	Company A		Company B	
	Sales (£ millions)	Number of workers	Sales (£ millions)	Number of workers
2004	320	2960	48	605
2014	388	3200	57	640

(a) Work out the percentage increase in sales from 2004 to 2014 for Company A.

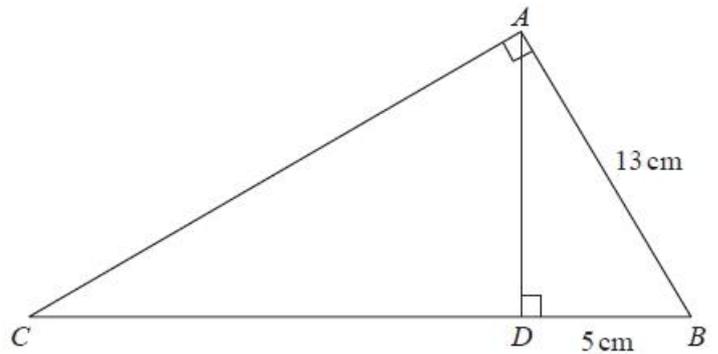
..... % **(2)**

(b) Which company had the most sales per worker in 2014, Company A or Company B?

You must show how you get your answer.

**(3)**  
**(Total for question = 5 marks)**

**Q4.**  $ABC$  and  $ABD$  are two right-angled triangles.



Angle  $BAC =$  angle  $ADB = 90^\circ$

$AB = 13$  cm

$DB = 5$  cm

Work out the length of  $CB$ .

..... cm

**(Total for question is 3 marks)**

**Q5.** The diagram shows the marking on a school playing field.

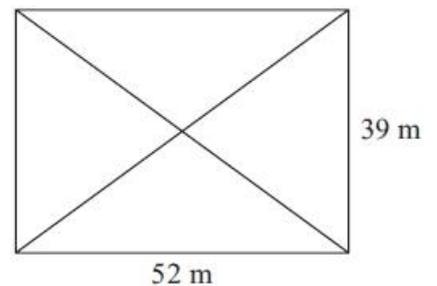


Diagram **NOT** accurately drawn

The diagram shows a rectangle and its diagonals.

Work out the total length of the four sides of the rectangle and its diagonals.

..... m

**(Total for Question is 5 marks)**

**Q6.** Linda keeps chickens.

She sells the eggs that her chickens lay.

She has 140 chickens.

Each chicken lays 6 eggs a week.

Linda gives each chicken 100 g of chicken feed each day.

The chicken feed costs £6.75 for a 25 kg bag.

Work out the cost of the chicken feed for every 12 eggs.

**(Total for question = 5 marks)**

**Q7.** Here is a right-angled triangle.

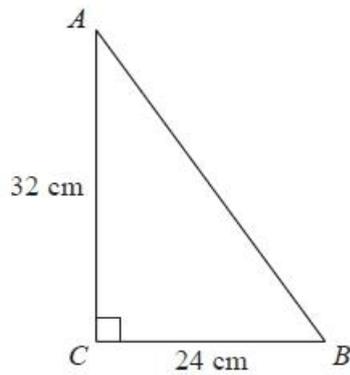
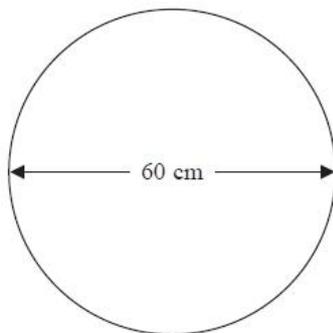


Diagram **NOT** accurately drawn

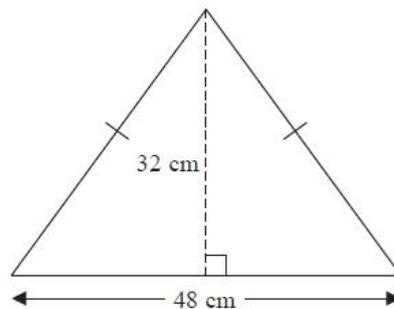
(a) Work out the length of  $AB$ .

..... cm (3)

Inderpal is making two mirrors.



Mirror A



Mirror B

Diagram **NOT** accurately drawn

Mirror **A** is in the shape of a circle.  
This mirror has a diameter of 60 cm.

Mirror **B** is in the shape of an isosceles triangle.  
This mirror has base 48 cm and height 32 cm.

Inderpal buys metal strips to put around the edge of each mirror.  
The metal strip is sold in lengths of one metre.  
Each one metre length of metal strip costs £5.68

(b) Work out the total amount Inderpal pays.  
You must show all your working.

£..... (4)  
(Total for Question is 7 marks)

**Q8.** Here is part of a field.

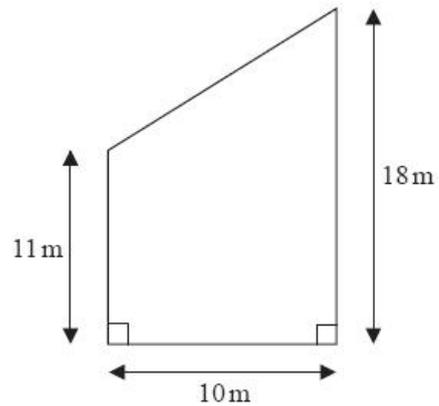


Diagram NOT accurately drawn

This part of the field is in the shape of a trapezium.  
A farmer wants to put a fence all the way around the edge of this part of the field.

The farmer has 50m of fence.

Does he have enough fence?  
You must show all your working.

**(Total for question = 5 marks)**

**Q9.** One day Sally earned £60

She worked for 8 hours.

Work out Sally's hourly rate of pay.

£.....

**(Total for question = 2 marks)**

**Q10.**

In the diagram,

$ABC$ ,  $ACD$  and  $APD$  are right-angled triangles.  
 $AB = 4$  cm.  
 $BC = 3$  cm.  
 $CD = 2$  cm.

Work out the length of  $DP$ .

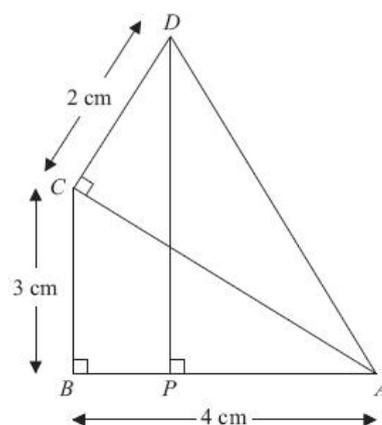


Diagram NOT accurately drawn

**(Total for Question is 5 marks)**

**Q11.**

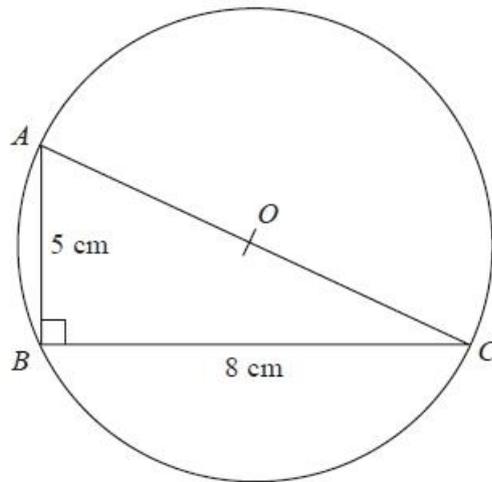


Diagram **NOT**  
accurately drawn

$ABC$  is a right-angled triangle.  
 $A$ ,  $B$  and  $C$  are points on the circumference of a circle centre  $O$ .  
 $AB = 5$  cm  
 $BC = 8$  cm

$AOC$  is a diameter of the circle.

Calculate the circumference of the circle.  
Give your answer correct to 3 significant figures.

..... cm

**(Total for question = 4 marks)**

**Q12.** Shazia buys 10 boxes of drinks.

The cost of each box of drinks is £5  
Each box holds 12 cans of drink.

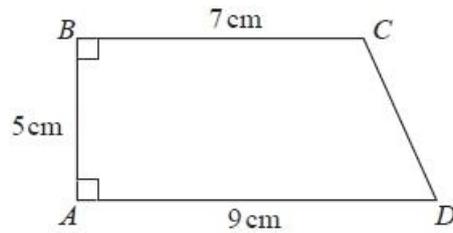
Shazia sells  $\frac{2}{3}$  of the total number of cans for 60p each.

She then sells all the remaining cans for 30p each.

Work out the total profit that Shazia makes.

**(Total for question = 5 marks)**

**Q13.**  $ABCD$  is a trapezium.



A square has the same perimeter as this trapezium.

Work out the area of the square.

Give your answer correct to 3 significant figures.

.....  $\text{cm}^2$

**(Total for question is 5 marks)**

**Q14.** The diagram shows a square  $ABCD$  inside a circle.

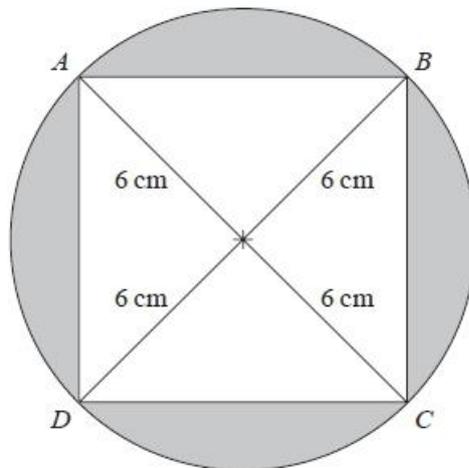


Diagram **NOT** accurately drawn

The points  $A$ ,  $B$ ,  $C$  and  $D$  lie on the circle.

The radius of the circle is 6 cm.

Work out the total area of the shaded regions.

Give your answer correct to 3 significant figures.

.....  $\text{cm}^2$

**(Total for question = 4 marks)**

**Q15.** Paul organised an event for a charity.

Each ticket for the event cost £19.95  
Paul sold 395 tickets.

Paul paid costs of £6000  
He gave all money left to the charity.

(a) Work out an estimate for the amount of money Paul gave to the charity.

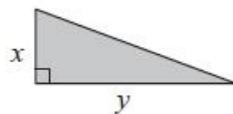
£..... (3)

(b) Is your answer to (a) an underestimate or an overestimate?  
Give a reason for your answer.

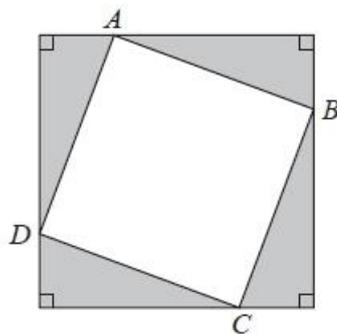
(1)

(Total for question = 4 marks)

**Q16.** Here is a right-angled triangle.



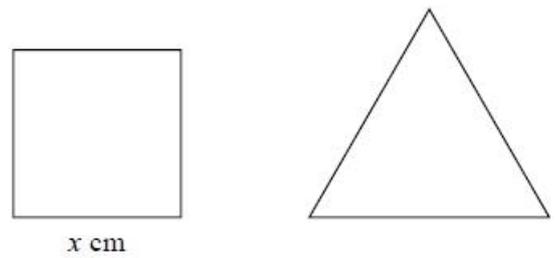
Four of these triangles are joined to enclose the square  $ABCD$  as shown below.



Show that the area of the square  $ABCD$  is  $x^2 + y^2$

(Total for question = 3 marks)

**Q17.** Here are a square and an equilateral triangle.



The length of a side of the square is  $x$  cm.

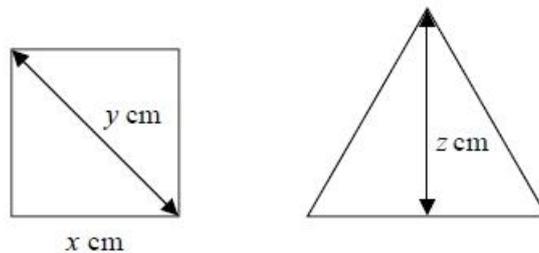
The length of a side of the equilateral triangle is 2 cm more than the length of a side of the square.

The perimeter of the square is equal to the perimeter of the equilateral triangle.

(a) Work out the perimeter of the square.

**(3)**

Here are the same square and the same equilateral triangle.



The length of the diagonal of this square is  $y$  cm.

The height of this equilateral triangle is  $z$  cm.

(b) Which has the greater value,  $y$  or  $z$ ?

**(4)**  
**(Total for question = 7 marks)**

**Q18.** Noah buys coffee sachets to use in his coffee maker.

There are 16 coffee sachets in a pack.

A pack costs £3.99

Noah uses 5 coffee sachets each day.

Work out the minimum amount that Noah spends on coffee sachets in one year.

**(Total for question = 4 marks)**