

FORM 4 REVISION SHEET 2013

Mental Paper

Number	Question	Working
1	Find the value of x. $2^x = 16$ Answer: _____	
2	Simplify $\frac{2\pi r l + 2\pi r^2}{6\pi}$ Answer: _____	
3	If $\sin x = \frac{12}{13}$ find $\cos x$. Answer: _____	
4	Find the equation of a line who passes through the point (0,-1) and has a gradient of 2. Answer: _____	
5	Write down all prime numbers, which are positive and are also less than 10. Answer: _____	
6	What is the name of that quadrilateral which has both pairs of opposite sides equal but no right angles? Answer: _____	

7	<p>Work out:</p> $\frac{50 \times 42 \times 24}{18 \times 35 \times 40}$ <p>Answer: _____</p>	
8	<p>Express 450 as a percentage of 1350.</p> <p>Answer: _____</p>	
9	<p>Three exterior angles of an octagon are $(x + 20)^\circ$ each; another 4 angles are $(x - 5)^\circ$ each; and one angle is x°. Find the size of one of the larger angles.</p> <p>Answer: _____</p>	
10	<p>A packet of 6 bottles of moisturizing liquid costs €15. Find the cost of 2 bottles.</p> <p>Answer: _____</p>	
11	<p>Peter watches his favourite programs on TV every day from 4:15pm to 5:30pm and from 7:15pm to 8:00pm. How many hours of TV does he watch in 5 days?</p> <p>Answer: _____</p>	
12	<p>A mat has an area of 0.75m^2. Find the area occupied by 20 such mats.</p> <p>Answer: _____</p>	
13	<p>Find the value of $3x^2 + y$, when $x = 3$ and $y = -1$.</p> <p>Answer: _____</p>	
14	<p>Find the value of $\sqrt{150}$, to the nearest whole.</p> <p>Answer: _____</p>	

15	Find the value of y for the following simultaneous equations. $3x - 2y = 0$ $2x + y = 7$ Answer: _____	
16	Write the following in standard form 0.0000887. Answer: _____	
17	Calculate the actual cost of a car, which was sold for €770 at a loss of 30%. Answer: _____	
18	Given that $3^a = 5$ and $3^b = 8$, what is the value of 3^{a+b} ? Answer: _____	
19	Calculate the total cost of 32 scarves at €4.50 each and 32 caps at €6.50 each. Answer: _____	
20	€2700 is divided between Tessa, James and William in the ratio 2:3:4. What is Tessa's share? Answer: _____	

Question 1

The scores on a four sided spinner are 1, 2, 3 or 4. On a second spinner the scores are 5, 6, 7 and 8.

If the two are spun find the probability that:

- a) The sum of two numbers is 9
- b) The product of the two numbers is a prime number
- c) The difference between the two numbers is 2.

Question 2

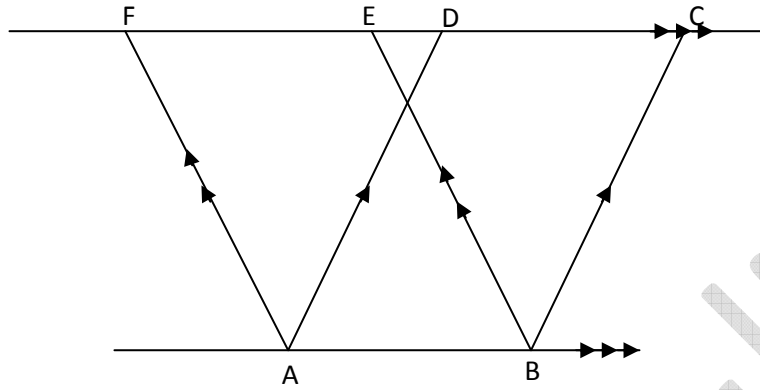
a) Construct a triangle ABC in which $AB = 12\text{cm}$, $AC = 11\text{cm}$ and $BC = 8\text{cm}$.

b) Draw the locus of points equidistant from AB and AC.

c) Draw the locus of points equidistant from AC and CB.

d) Mark, with I, the point of intersection of the two loci you have found in (b) and (c). What is special about point I? _____

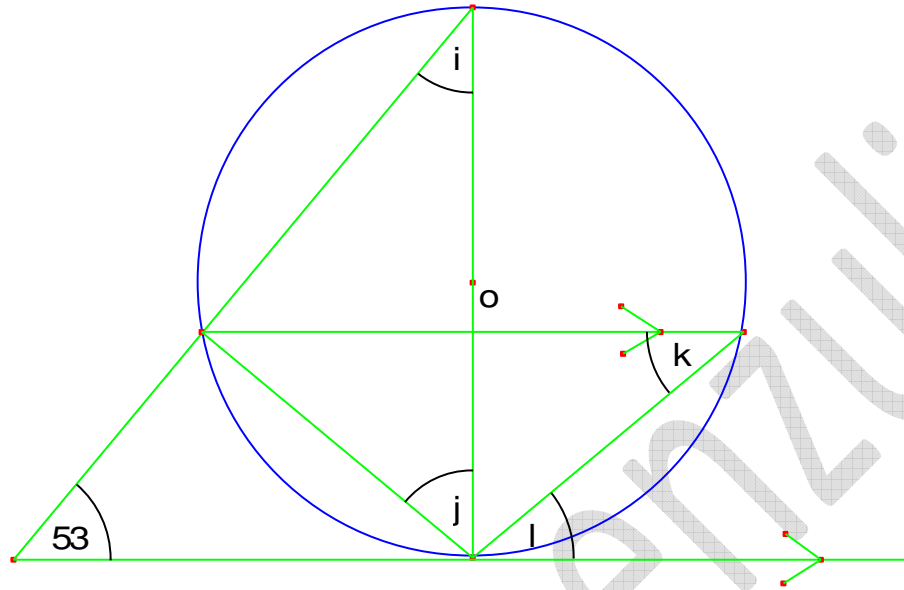
Question 3



In the diagram, ABCD and ABEF are parallelograms. Show that Δ s ADF and BCE are congruent.

By considering the shape ABCF and then removing each of the triangles AFD and BEC in turn, what can you say areas of the two parallelograms?

Question 4



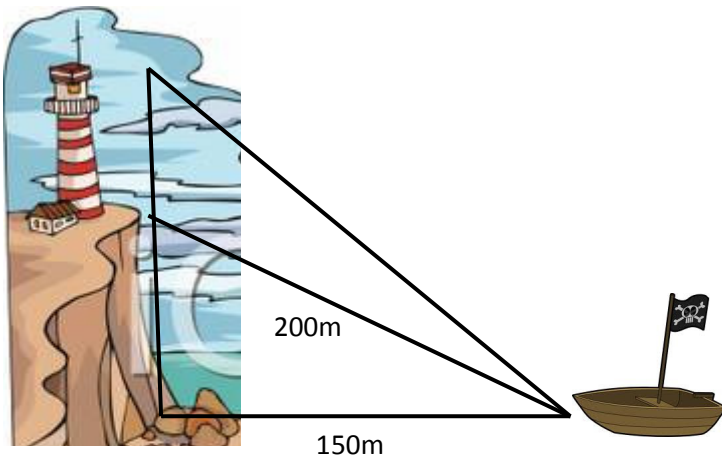
Find the missing angles.

Question 5

a) In a test, the sum of Harry's marks and Adam's marks is 42. Sam has twice as many marks as Adam, and the sum of Harry's and Sam's marks is 52. What are the marks of each of the three boys?

b) The equation of a straight line is $y = mx + c$. When $x = 1$, $y = 6$ and when $x = 3$, $y = 10$. Form two equations for m and c and hence find the equation of the line.

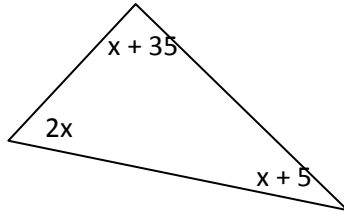
Question 6



a) Work out the height of the cliff.

b) Considering that the angle from the sea to the top of the light house is 34° , what is the angle of depression?

c) Calculate the height of the lighthouse.

Question 7

The angles of a triangle, in degrees, are $2x$, $x + 5$ and $x + 35$. Find the value of x .

Question 8

A rectangular room is 3m longer than it's wide. The perimeter is 16m.

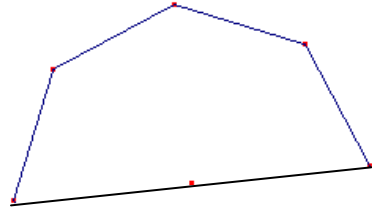
Floor tiles cost \$9 per square meter. How much will it cost to cover the floor?

Question 9

A joiner is making tables so that the shape of each one is half a rectangular octagon, as shown in the diagram.

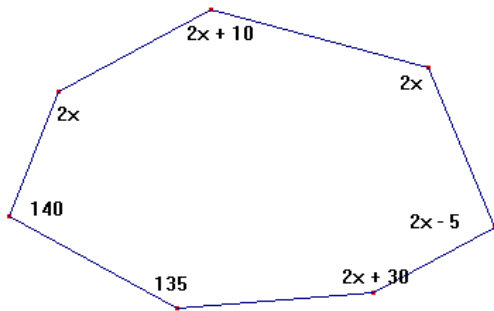
He needs to know the size of each angle on the top.

What are the sizes of the angles?



Question 10

Find the value of x .



Question 11

How many sides does the regular polygon have if each exterior angle is 44° .

Question 12

$$D = 3s - 7t$$
$$s = -4, t = 2$$

Work out the value of D .

$$M = \frac{Q(P + 2)}{6}$$
$$P = -4, Q = 30$$

Work out the value of M .

Question 13

- a) Write the following in standard form:

0.000268

9350000

- b) Write the following as ordinary numbers:

2.54×10^4

7.01×10^{-2}

- c) Write the following in standard form:

$(5 \times 10^4) \times (3 \times 10^{-2})$

Question 14

Six sweet pea seeds were planted in each of 25 plant pots. After germination the number of seedlings in each pot was counted and the results are given in the table below.

Number of Seedlings	Frequency
1	1
2	1
3	4
4	6
5	7
6	6

- a) What is the modal number of seedlings?
- b) What is the median number of seedlings?
- c) Estimate the mean number of seedlings.

Question 15

Find the value of the following:

a) $(ab)^0$

b) $(4^{-1})^{-3}$

c) $(\frac{2}{3})^{-2}$

d) $(\frac{5}{6})^2$

Question 16

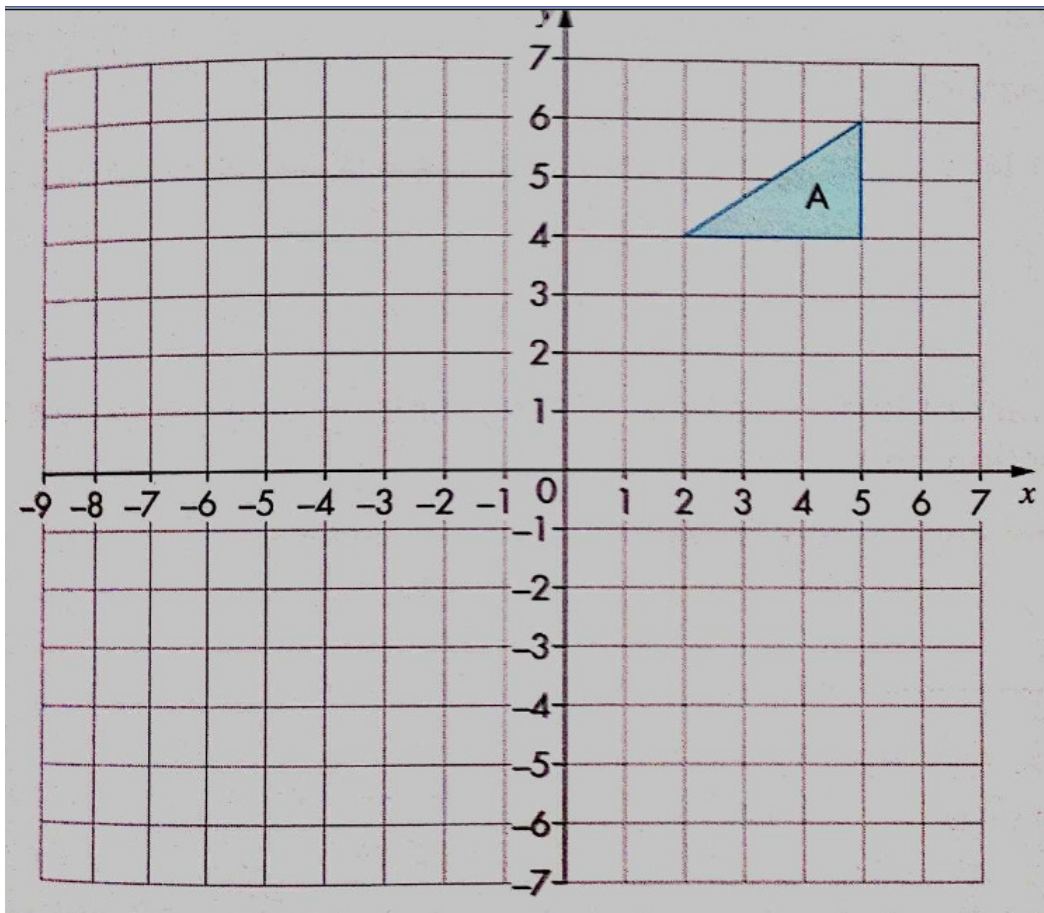
Simplify the following:

a) $5a^{-5} \times 4a^{-3}$

b) $8a^{-4} \div 2a^{-2}$

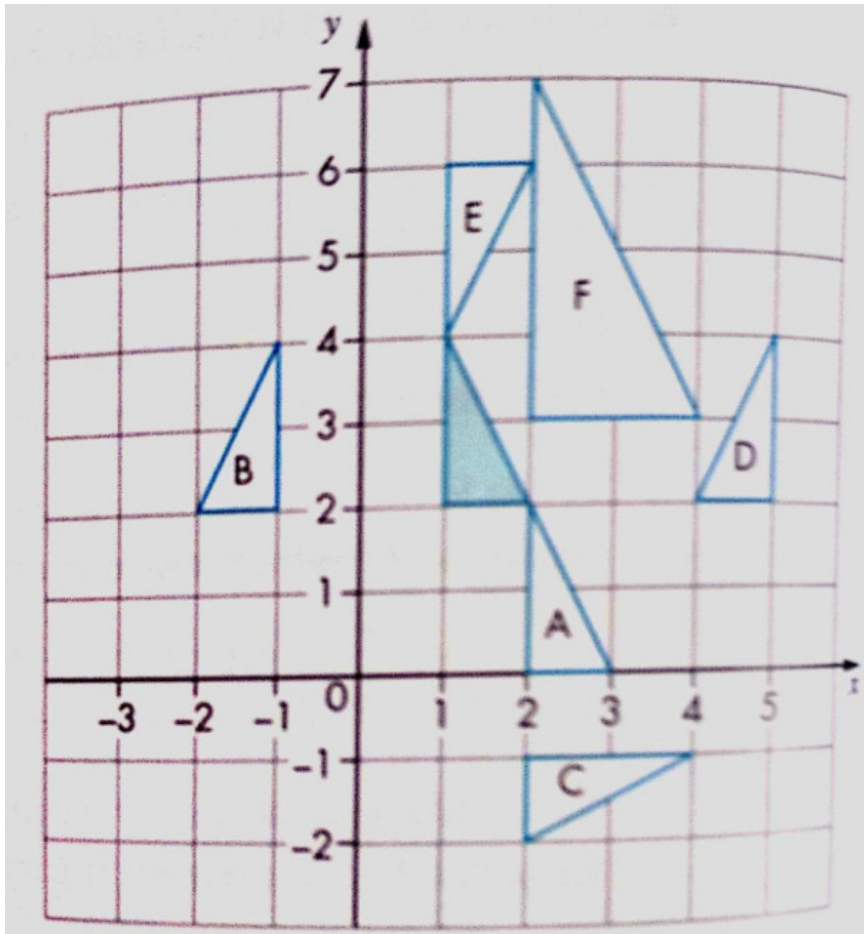
c) $x^{-2}y \times 3x^{-3}y^{-2}$

Question 17



- a) Triangle A is translated by vector $\begin{pmatrix} -2 \\ -3 \end{pmatrix}$ to give triangle B
- b) Triangle B is then enlarged by a scale factor 2 about the origin to give triangle C.
- c) Describe fully the single transformation that maps triangle C onto triangle A.

Question 18



Describe fully the transformations that will map the shaded triangle onto each of triangles A – F.

Question 19

a) Complete the table of the graph $y = x^2 - 4x - 9$ for the values of x from -2 to 6.

x	-2	-1	0	1	2	3	4	5	6
x^2									
$-4x$									
-9									
y									

b) Draw the graph of the equation $y = x^2 - 4x - 9$ using 2cm as 1 unit on the x-axis and 1cm and 1 unit on the y-axis.

c) Use your graph to find

a. The values of x when $x^2 - 4x - 9$ has a value of -6

b. The value of $x^2 - 4x - 9$ when x is 1.4.

d) Draw the line $y = 1$.

e) Solve the equation $x^2 - 4x - 9 = 1$.

