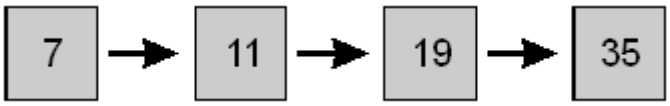
Q1. Number sequence

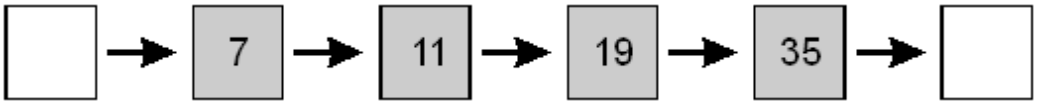
Here is part of a number sequence.



To get the next number you

multiply by 2 then subtract 3

Fill in the two missing numbers in the sequence.



2 marks

Q2. Variables

Look at this equation.

$a + b = 7$

Write three **different** solutions to the equation.

a = ... b = ...

a = ... b = ...

a = ... b = ...

2 marks

Q3. Counters

(a) Gill puts **4 counters** in a bag.

3 counters are black.1 counter is white.

Gill is going to take a counter out of the bag without looking.

What is the **probability** that the counter will be **white**?
Put a ring round the correct answer.

$\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{2}$ $\frac{1}{1}$

1 mark

(b) Sam puts **20 counters** in a different bag.
She is going to take a counter out of the bag without looking.

The **probability** that the counter will be red is $\frac{1}{2}$

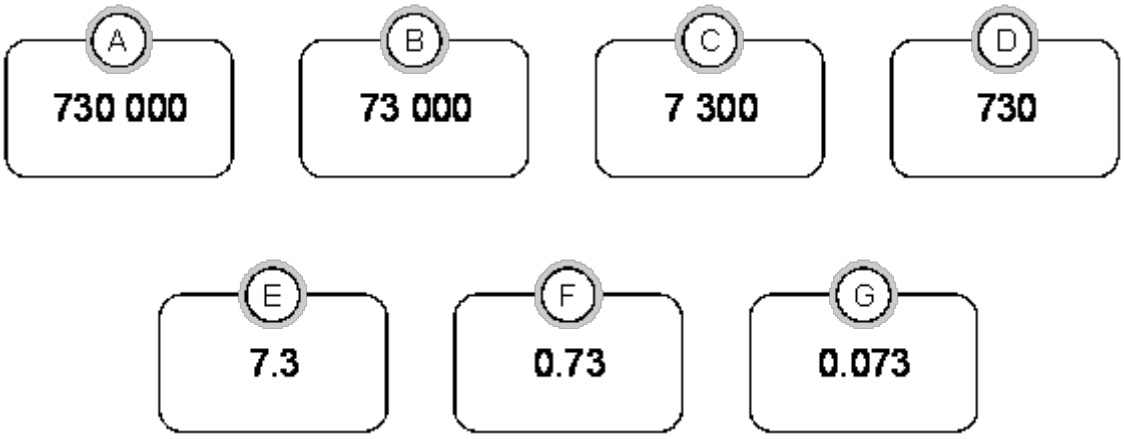
How many red counters are in her bag?

.....

1 mark

Q4. Seventy-three

Look at these number cards.



Write the letter of the card that is

ten times as big as 73 .....

1 mark

one thousand times as big as 73 .....

1 mark

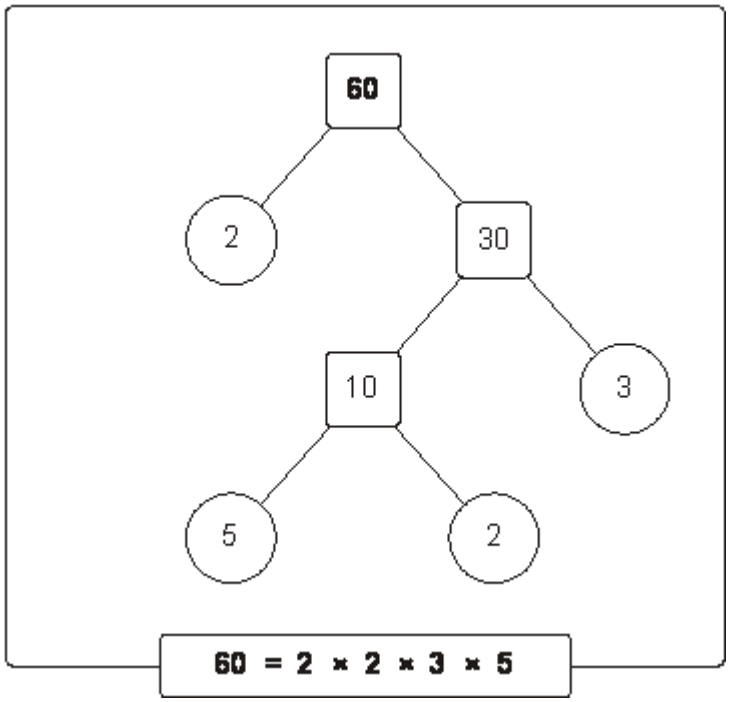
one hundredth of 73 .....

1 mark

Q5. Prime factors

You can write any whole number as a product of its prime factors.

Here is an example for the number 60:



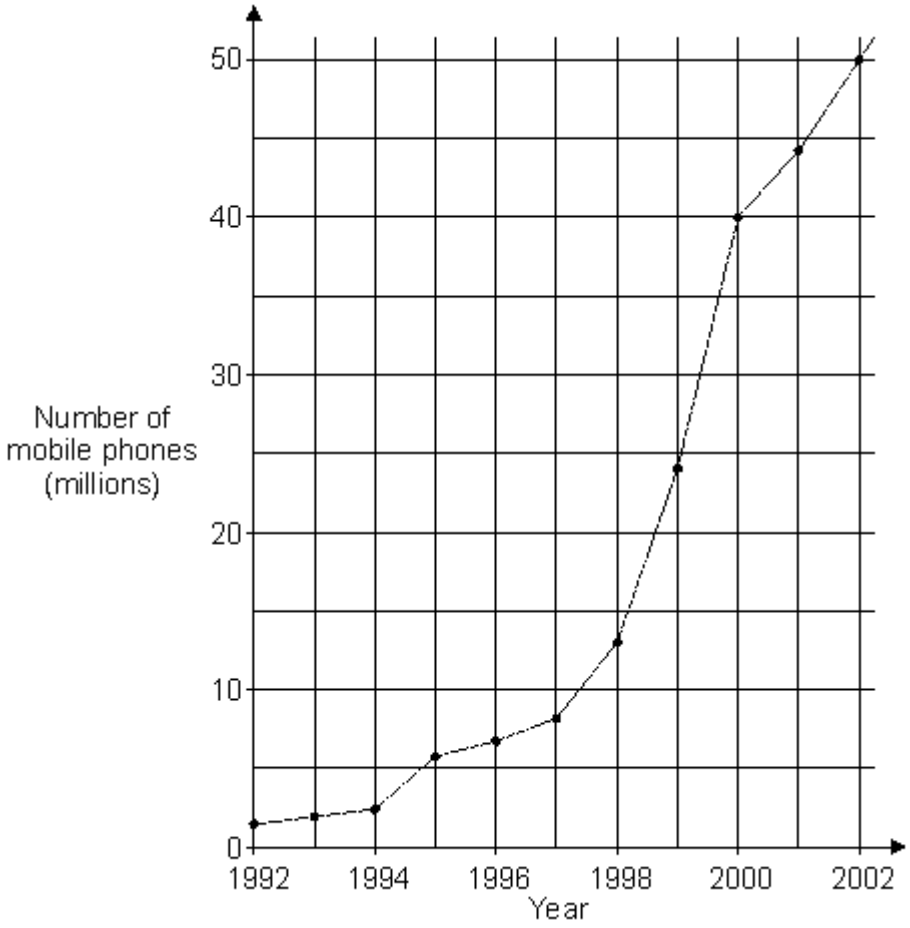
Write **225** as a product of its prime factors.

225 = ...

2 marks

Q6. Mobile phones

A survey showed these results about the number of mobile phones used in the UK.



Use the graph to write the missing numbers below.

In **1992**, there were about ..... million mobile phones.

1 mark

Ten years later, there were about ..... million mobile phones.

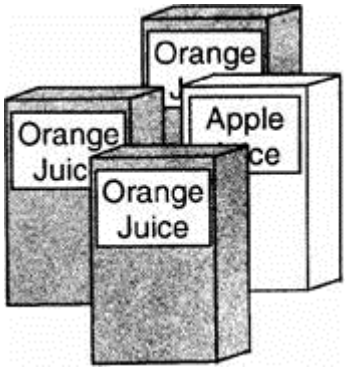
1 mark

From **1998 to 1999**, the number of mobile phones **increased** by about .....million.

1 mark

Q7. Ratios

(a) Nigel pours **1** carton of **apple** juice and **3** cartons of **orange** juice into a big jug.



What is the **ratio** of **apple** juice to **orange** juice in Nigel's jug?

apple juice : orange juice = ... **:** .....

1 mark

(b) Lesley pours **1** carton of **apple** juice and **1 ½** cartons of **orange** juice into another big jug.

What is the **ratio** of **apple** juice to **orange** juice in Lesley's jug?

apple juice: orange juice = ... **:** .....

1 mark

(c) Tandi pours **1** carton of **apple** juice and **1** carton of **orange** juice into another big jug.

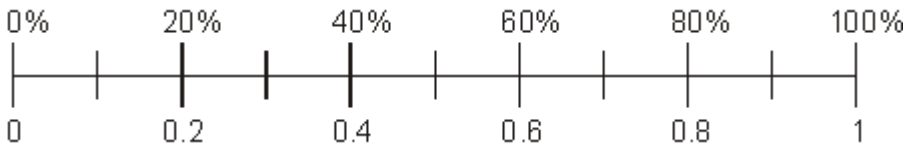
She wants only **half** as much **apple** juice as **orange** juice in her jug.

What should Tandi pour into her jug now?

1 mark

Q8. Double scale

The scale shows both percentages and decimals.



Fill in the missing **decimals** in the gaps below.

The first one is done for you.

60% is the same as .....*0.6*.....

30% is the same as .....

1 mark

3% is the same as .....

1 mark

Q9. Solving

Find the values of x

$5x - 3 = 12$

x = ...

1 mark

$13 + 2x = 3$

x = ...

1 mark

Q10. Simplify

(a) Write these expressions as simply as possible.

The first one is done for you.

$n + 1 + 2$ → $n + 3$

$3n + 5n$ →

1 mark

$2n + 7 + n + 2$ →

1 mark

(b) Multiply $(5n + 2)$ by 3

Write your answer without any brackets.

1 mark

Q11. CD player

(a) Work out the missing values.

10%	of	84	=	.....
5%	of	84	=	.....
$2\frac{1}{2}$%	of	84	=	.....

2 marks

(b) The cost of a CD player is £84 **plus** $17\frac{1}{2}$% tax.

What is the **total** cost of the CD player?

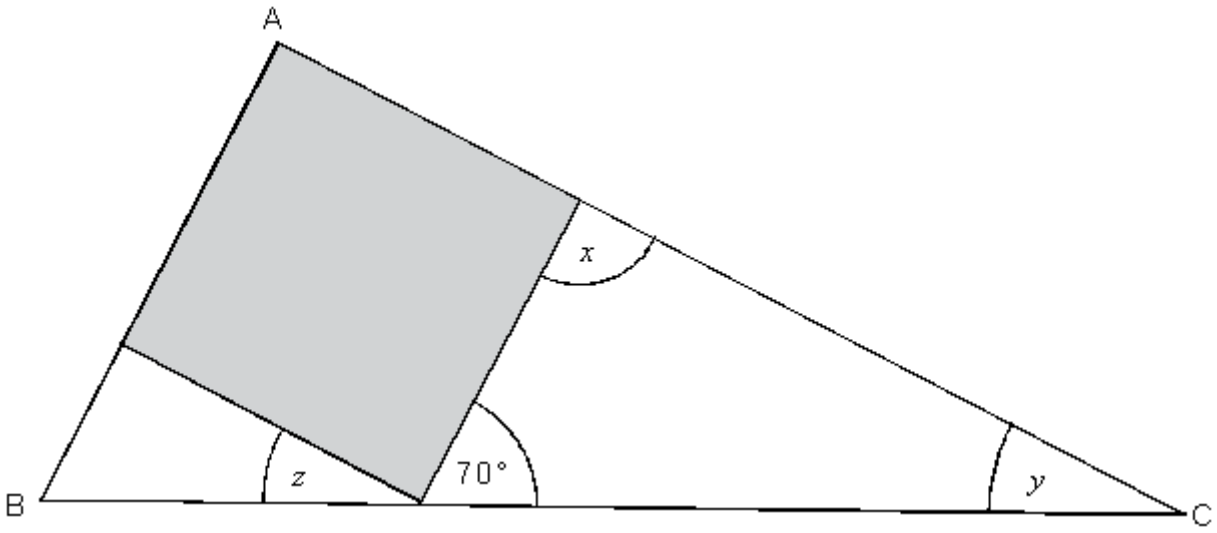
You can use part (a) to help you.

£

2 marks

Q12. Angles in a triangle

Look at the right-angled triangle ABC.



Not drawn accurately

The square fits exactly inside the triangle.

Work out the sizes of angles x, y and z

x = ...°

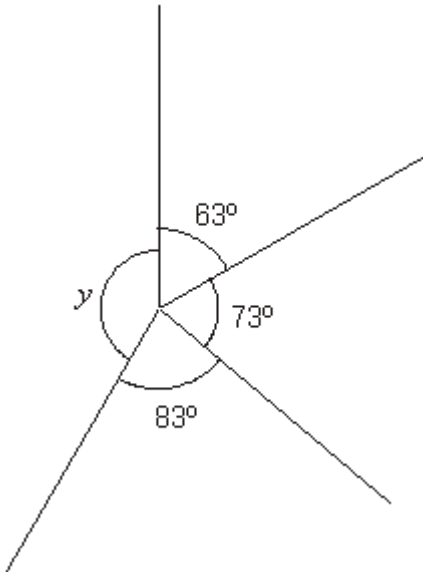
y = ...°

z = ...°

3 marks

Q13. Missing angle

Work out the size of angle y



Not drawn accurately

y = ...°

2 marks

Q14. Fraction size

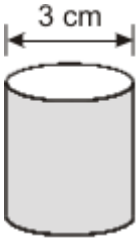
Write numbers in the boxes so that the fractions are in size order.

$\frac{1}{4}$ $\quad \frac{\square}{7}$ $\quad \frac{1}{\square}$ $\quad \frac{3}{5}$ $\quad \frac{2}{\square}$

2 marks

Q15. Cotton reel

(a) The cross-section of a cylindrical cotton reel is a circle.



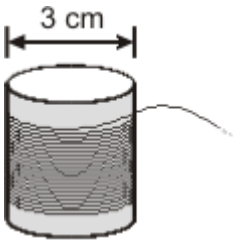
The **diameter** of this circle is **3 cm**.

What is the **circumference** of this circle?

..... cm

1 mark

(b) **91 metres** of cotton goes round the cotton reel.



About how many times does the cotton go round the reel?

Show your working, and give your answer to the **nearest ten.**

.....

2 marks

Q16. Rearrange

(a) Rearrange the equations.

$b + 4 = a$

$b =$ .....

1 mark

$4d = c$

$d =$ .....

1 mark

$m - 3 = 4k$

$m =$ .....

1 mark

(b) Rearrange the equation to make t the subject.

Show your working.

$5(2 + t) = w$

$t =$ .....

2 marks

Q17. Currency

(a) Use **£1** = **1.47 Swiss francs** to work out how much **45p** is in Swiss francs.

Show your working.

45p = ... swiss francs

2 marks

(b) Use **5.86 Polish Zloty** = **£1** to work out how much **25 Polish Zloty** is in pounds.

Show your working.

25 Polish Zloty = £ .....

2 marks

(c) Use £1 = 1.47 Swiss francs and £1 = 5.86 Polish Zloty to work out how much **1 Swiss franc** is in **Polish Zloty.**

Show your working.

1 Swiss franc = ... Polish Zloty

2 marks

Q18. Values

(a) Look at this information.

$$x \leq 0$$

Give an example of what the value of x could be.

.....

Give a **different** example of what the value of x could be.

.....

1 mark

(b) Now look at this information.

$$2y + 3 \leq 11$$

What is the **largest** value that y could be?

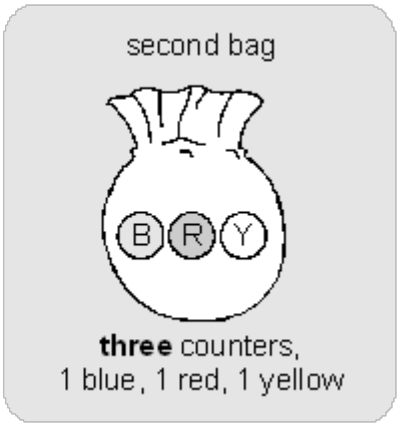
.....

1 mark

1 mark

Q19. Two counters

I have two bags of counters.



I am going to take a counter at random from both bags.

(a) Complete the table to show what colours they might be.

The first one is done for you.

You will **not** need to use all the rows.

first bag	second bag
B	B

2 marks

(b) What is the probability that both counters will be the **same** colour?

1 mark

Q20. Speed

(a) Show that, at **40km/h**, it takes 1 minute 30 seconds to travel 1km.

1 mark

(b) At **80km/h**, how many seconds does it take to travel 1km?

..... seconds

1 mark

Q21. Mean Age

There are five people in the Smith family.

Females	Males
Mrs Smith, 38 years old	Mr Smith, x years old
Tina Smith, 9 years old	Ben Smith, y years old
Helen Smith, 7 years old	

The **mean** age of the **males** is **28**

What is the **mean** age of all **five** people in the family?

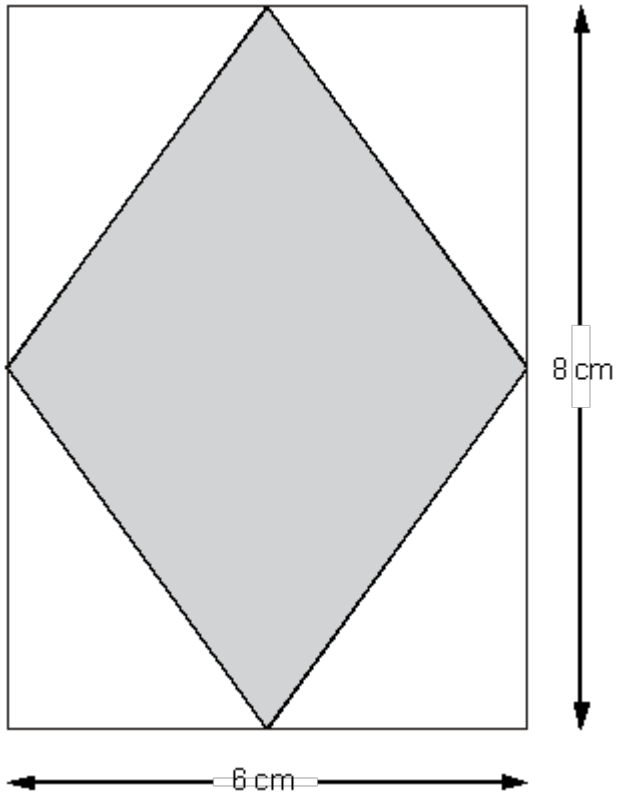
.....

2 marks

Q22. Rhombus

Inside the rectangle below is a shaded rhombus.

The vertices of the rhombus are the midpoints of the sides of the rectangle.



Not drawn accurately

What is the **area** of the shaded rhombus?

.....

3 marks

Q23. Sequences

(a) **Draw lines** to match each *n*th term rule to its number sequence.

*n*th term	Number sequence
$4n$	4, 7, 12, 19, ...
$(n+1)^2$	4, 8, 12, 16, ...
n^2+3	4, 9, 16, 25, ...
$n(n+3)$	4, 10, 18, 28, ...

2 marks

(b) Write the **first four** terms of the number sequence using the nth term rule below.

n^3+3 ——— _____, _____, _____, _____

2 marks

Q24. Simultaneous

Solve these simultaneous equations using an algebraic method.

$4x + 3y = 21$

$2x + y = 8$

You **must** show your working.

$x =$ ..... $y =$ .....

3 marks

Q25. Flags

The material for a large flag measuring **5m 55cm** by **7m 40cm** is to be assembled from **square** pieces of material all the same size.

If the pieces are to be as large as possible,

- how many pieces will be needed?
- what size will they be?
-

You **must** show your working.

Size of the squares ……..

Number of pieces ….…….

4 marks

End of Test. Please go back and check your work.