Number Problems (F)

A collection of 9-1 Maths GCSE Sample and Specimen questions from AQA, OCR, Pearson-Edexcel and WJEC Eduqas.

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Total Marks:	

1. Write numbers in the boxes below to make the statement true.

$$15 \times 20 = 5 \times \boxed{60} = 6 \times \boxed{50}$$

15 × 20
5 × 3 × 20   5× 60
5 × 60   5 × 6 × 10   = 6× 5×10

[2]

2. Angus thinks of a number.

   If he cubes his number and then adds 9, he gets 17.

   What number is he thinking of?

$$x^3 + 9 = 17 \qquad x = \sqrt[3]{8}$$
$$ -9 \quad -9 \qquad\qquad x = \underline{2}$$
$$x^3 = 8$$

[2]

3. Leo is using these numbers to make a new number.

$$11 \qquad 1 \qquad 3 \qquad 6$$

   • He can use brackets, +, -, × and ÷ as often as he wishes.

   • He cannot use any number more than once.

   • He cannot use powers.

   • He cannot put numbers together, e.g. he can't use 136.

   What is the biggest number he can make?

   Show how he can make this number.

$$(3+1) \times 6 \times 11 = 264$$

[4]

4. Peter says

- The sum of an odd number and an even number is even.

- The example 3 + 4 = 7 shows that Peter is not correct.

Write an example to show that each of these statements is not correct.

(a) The sum of two prime numbers is always odd.

$$2, 3 \; 5 \; 7 \; 11 \; 13$$

$$3 + 5 = 8$$

[1]

(b) Squaring a whole number always results in an even number.

$$1^2 = 1$$

[1]

5. The product of three numbers is 312.

Two of the numbers are 3 and 13.

What is the third number?

$$3 \times 13 \times \, ? = 312$$

$$312 \div 39 = 8$$

8

.... [3]

6. Here are some numbers.

25

9.6   12.6   15.4   7.6   12.4   17.4

Write the numbers in pairs so that the sum of the numbers in each pair is the same.

25   25

_____9.6_____ and _____15.4_____

_____12.6_____ and _____12.4_____

_____7.6_____ and _____17.4_____

_____ and _____

[2]

7. Tanya needs to buy chocolate bars for all the children in Year 7

Each of the 130 children get one chocolate bar.

There are 8 chocolate bars in each packet.

Work out the least number of packets of chocolate bars that Tanya needs to buy.

$$130 \div 8 = 16.25 \qquad \therefore 17 \; packets$$
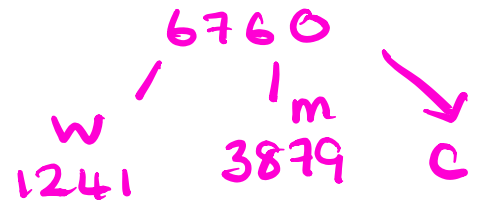
[3]

8. There are 6760 people are at a rugby match.

   3879 of the people are men.

   1241 of the people are women.

   $\frac{1}{4}$ of the children are girls.

   Work out how many boys are at the rugby match.

   6760

   w 1241   m 3879   c

   6760 − (1241+3879) = 1640

   $\frac{1}{4}$ of 1640 = 410 girls

   410 × 3 =

   .... 1230 .... [3]

9. Three whole numbers have a total of 100

   The first number is a multiple of 15   30   45 50 .60 75 90

   The second number is ten times the third number.   50   40   25   10

   ⬭55

   Work out the three numbers.

   45, 5, 50

   x + 10x + _____ = 100

   11x + 45 = 100

   11x = 55 x = 5

   [3]

10. Tomas ran a Lucky Dip stall.

   $\frac{5}{15}$ =10 $\frac{5}{45}$ =5

   95   ×7   =75×1·5   112·50

   LUCKY DIP

   Tickets 50p

   Tickets ending 00 win £12

   Tickets ending 5 win £1.50
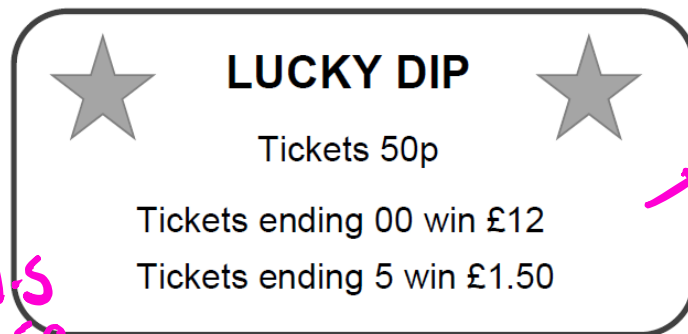
   100 200 ⋮ 700   = 7 × 12 = 84

   There were 750 tickets, numbered 1 to 750

   Tomas sold all the winning tickets, and some of the losing tickets.

   He made a profit of £163

   163 + 112·50 + 84 = 359·50

   How many losing tickets did he sell?

   = 719 tickets In total

   LOSING TICKETS = 719 - (75+7) = 637

   [6]

11. Becky has some marbles.

Chris has two times as many marbles as Becky.

Dan has seven more marbles than Chris.

They have a total of 57 marbles.

57 ÷ 3 = 19 each .

Dan says:

"If I give some marbles to Becky, each of us will have the same number of marbles."

Is Dan correct?

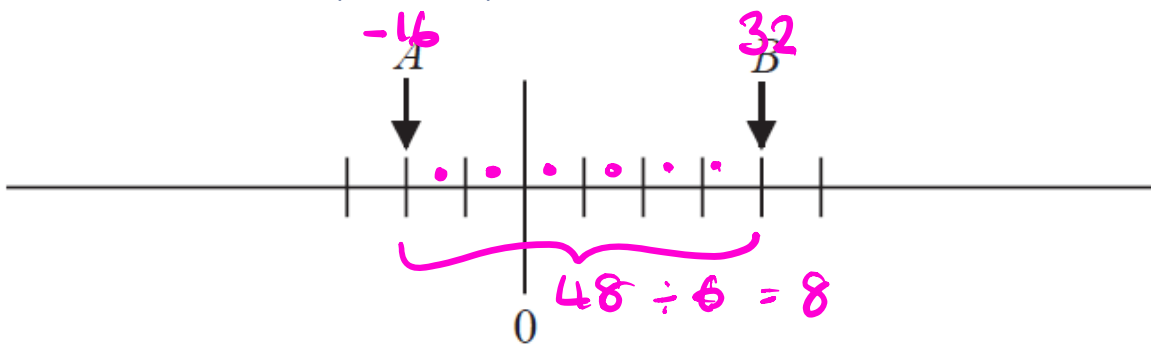You must show how you get your answer.

No, Chris would have to give her 1 marble so they all have 19 each

$$
\begin{array}{ccc}
B & C & D \\
x & 2x & 2x+7 = 57 \\
 & 5x & = 50 \\
 & x & = 10 \\
10 & 20 & 27
\end{array}
$$

[3]

12. The two numbers, A and B, are shown on a scale.

-16   *32*

48 ÷ 6 = 8

0

The difference between A and B is 48

Work out the value of A and the value of B.

A = ... *-16* ....

B = ... *32* .... [3]

13. I am thinking of a number (*n*).

I add 5 to my number.   *n + 5*

I divide the answer by 4 $\frac{n+5}{4} = 3.625$

My final answer is 3.625

Work out my final answer if I add 4 to my number (n) and then divide by 5

$3.625 \times 4 - 5 = 9.5.$

$\frac{9.5 + 4}{5} = 2.7$

[4]

CREDITS AND NOTES

Question	Awarding Body	Question	Awarding Body
1	OCR	13	AQA
2	OCR		
3	OCR		
4	OCR		
5	OCR		
6	AQA		
7	Pearson Edexcel		
8	Pearson Edexcel		
9	AQA		
10	AQA		
11	Pearson Edexcel		
12	Pearson Edexcel		

Notes:

These questions have been retyped from the original sample/specimen assessment materials and whilst every effort has been made to ensure there are no errors, any that do appear are mine and not the exam board s (similarly any errors I have corrected from the originals are also my corrections and not theirs!).

Please also note that the layout in terms of fonts, answer lines and space given to each question does not reflect the actual papers to save space.

These questions have been collated by me as the basis for a GCSE working party set up by the GLOW maths hub - if you want to get involved please get in touch. The objective is to provide support to fellow teachers and to give you a flavour of how different topics "could" be examined. They should not be used to form a decision as to which board to use. There is no guarantee that a topic will or won't appear in the "live" papers from a specific exam board or that examination of a topic will be as shown in these questions.

Links:

AQA http://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300

OCR http://ocr.org.uk/gcsemaths

Pearson Edexcel http://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

WJEC Eduqas http://www.eduqas.co.uk/qualifications/mathematics/gcse/

Contents:

This version contains questions from:

AQA – Sample Assessment Material, Practice set 1 and Practice set 2

OCR – Sample Assessment Material and Practice set 1

Pearson Edexcel – Sample Assessment Material, Specimen set 1 and Specimen set 2

WJEC Eduqas – Sample Assessment Material