



Maths Home Learning Task

Year 9 sets 1 and 2

Higher 1

Name

Tutor Group

Teacher

Given out:

Monday 7 October

Hand in:

Monday 14 October

Parent/Carer Comment

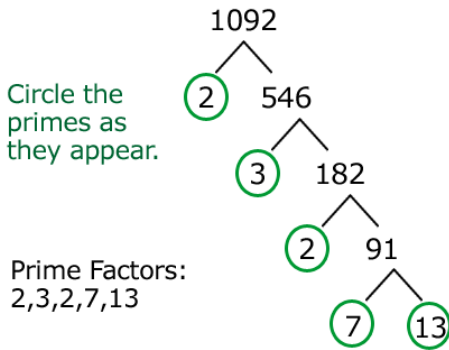
Staff Comment

ATL

Target

Instructions

It is important to complete as many of the tasks as you can. When you sit a GCSE exam you are graded on the amount of marks you score in total. Give them a go, you never know where you may pick up extra marks for trying.



TO CHANGE A PERCENT

Percent To A Decimal : Divide the percent by 100.

$$20\% = \frac{20}{100} = \frac{2}{10} = \frac{.2}{1} = 0.20$$

Dividing by 100 results in moving the decimal 2 places to the left.

Percent To A Fraction : Put 100 in the denominator and reduce if possible.

$$42\% = \frac{42}{100} = \frac{42 \div 2}{100 \div 2} = \frac{21}{50}$$

Amount

rate of interest

$$A = P \left(1 + \frac{r}{n} \right)^{nt}$$

Principal

number of times per year, interest is compounded

© mathwarehouse.com

Sample size for each layer = $\frac{\text{size of whole sample}}{\text{size of population}} \times \text{size of layer}$

So we look at what fraction of the whole population do we want. Then take that fraction of each layer. **Bite size**

Expanding

$$(n + 2)(n + 4)$$

$$n^2 + 4n + 2n + 8$$

$$n^2 + 6n + 8$$

Expanding

$$5n(n + 3)$$

$$= 5n^2 + 15n$$

Multiply in

Expanding

$$2(g + 4)$$

$$= 2g + 8$$

Multiply in

Calculating with fractions

- 1** What is:
- a** 15 seconds as a fraction of 1 minute?
 - b** 100 g as a fraction of 0.5 kg?
 - c** 50 p as a fraction of £5.00?
- 2** There are 30 students in Class 9M.
- a** $\frac{14}{15}$ of them are right handed. How many of the students are left-handed?
 - b** $\frac{3}{5}$ of them are going on the class outing. How many students are going?
 - c** $\frac{1}{3}$ of them travel to school on the bus, $\frac{3}{10}$ of them travel by car and $\frac{1}{5}$ of them cycle. The remaining students walk to school. How many students walk?
- 3** In a sale the price of a caravan was reduced by £800 from £12 000.
- a** What fraction reduction is this?
 - b** What fraction of the original price is the sale price?
- 4** Work out the following by the standard non-calculator method using common denominators.
- a** $\frac{5}{8} + \frac{1}{5}$
 - b** $\frac{5}{8} - \frac{1}{5}$
 - c** $3\frac{1}{4} + 1\frac{3}{10}$

Percentages

1 Write these in order of size, smallest first.

a $\frac{2}{5}$ 0.35 39%

b 64% 0.6 $\frac{13}{20}$

c 0.9 93% $\frac{47}{50}$

a .

b.

c.

2 a Complete this table of decimal multipliers.

To find	30%	18%	12.5%	5%	150%	3%
Multiply by						

b Use the decimal multipliers from your table to work out:

i 30% of 340

ii 18% of 600

iii 12.5% of £540

i.

ii.

iii.

3 Bill says '40% of 60 is the same as 60% of 40.'
Is he correct? Explain your answer.

4 A new car costs £17 400. It loses 10% of its value each year.

i. How much does it lose after 1 year?

ii. What is the value of the car after 1 year?

Ratio and Proportion

1 Write each of these ratios as simply as possible.

a 3 : 6

b 0.4 : 1.6

c 3 : 9

d $1\frac{1}{2} : 3\frac{1}{2}$

e 3 : 12

f 60% : 40%

2 Orange paint is made by mixing red and yellow paint in the ratio 4 : 3.

a How much yellow paint is needed to mix with 2 litres of red paint?

b How much red paint is needed to mix with 4.5 litres of yellow paint?

3 Raju bought 6 boxes of tiles. He paid £54 for them.

a How much would he have to pay for 8 boxes of tiles?

b i Complete the table.

Number of boxes of tiles	0	2	4	6	8	10
Cost (£)				54		

c The points should lie in a straight line through (0, 0).

i Explain why.

ii Use the table to find out how much Raju would have to pay for 7 boxes of tiles.

Prime numbers/factors

1 a Circle which of these numbers are multiples of 9:

233 262 459 561 1008 2781 4623

2 '5 and 9 are multiples of 45.'

Rewrite this statement to make it correct.

.....

3 Find the common factors of:

a 25 and 40

b 32 and 72.

4 Find the highest common factors (HCF) of:

a 28 and 48

b 54 and 48.

5 The HCF of two numbers is 7. Give a possible pair of numbers for which this is true.

6 Find the lowest common multiple (LCM) of the following pairs of numbers:

a 4 and 7

b 2 and 13.

7 a 391 is the product of two primes. Find the two numbers.

b 154 is the product of three primes. Find the three numbers.

Working with symbols

1 Simplify:

a $3c - 2c - 4 + 2c$

b $5x + 4 - 2x + 1 - 3x$

c $14 - 9a + 3b + 4a - 4b - 10$

d $2m^2 - 3 - 5y + 3m^2$

2 Expand and simplify:

a $3(x + 4) + 2(x + 5)$

b $5(3f - 1) + 2(4f - 3)$

c $3(q - 4) + 6(q - 5)$

3 Multiply out and simplify:

a $(x + 7)(x + 2)$

b $12(5 - y)$

c $(p - 3)^2$

4 Simplify:

a $\frac{4(x + 2)}{8x}$

b $\frac{5p}{7} - \frac{p}{2} + \frac{3p}{14}$

c $\frac{3}{10y} - \frac{1}{2y}$