Sutton Maths Class

Year 5 - Week 7 - Prime Numbers

Starter/Homework:

1 $\dfrac{5 \times 9}{7 \times 9} + \dfrac{4 \times 7}{9 \times 7} = \dfrac{45 + 28}{63} = \dfrac{73}{63}$ or $1\dfrac{10}{63}$

2 $\dfrac{5}{2} \times \dfrac{8^4}{9} = \dfrac{20}{9}$ or $2\dfrac{2}{9}$

3 $\dfrac{2}{3} \div \dfrac{4}{7} = \dfrac{2}{3} \times \dfrac{7}{4} = \dfrac{14}{12} = \dfrac{7}{6}$ or $1\dfrac{1}{6}$

4 What is 0.7 as a fraction? $\dfrac{7}{10}$

5 What is $\dfrac{3}{8}$ as a percentage? $\dfrac{1}{8} = 0.125 = 12.5\%$

So $\dfrac{3}{8} = 12.5\% \times 3$
$= 12.5 + 12.5 + 12.5$
$= 36 + 1.5$
$= 37.5\%$

6 What is 0.05 as a fraction? $\dfrac{5}{100} = \dfrac{1}{20}$

7 What is 15% as a decimal? 0.15

8 0.875 + 0.213 =
$\begin{array}{r} 0.875 \\ 0.213 \\ \hline 1.088 \end{array}$
3 d.p. ignored

9 0.03 x 0.6 = $6 \times 3 = 18$ $0.018 \rightarrow \underline{0.018}$ 3 d.p.

10 $(0.1)^2 = 0.1 \times 0.1 = 0.01 = 0.01$ $1 \times 1 = 1$

11 2.2 x 5 = $\underline{11}$ $22 \times 5 = 110$

12 $18 \div 0.2 =$
$1 \div 0.2 = 5$ so $18 \div 0.2 = 5 \times 18 = \underline{90}$

13 A rectangle has length 40m an width 50cm. Find the area in m^2.
Hint: make sure the units are the same before multiplying.
0.5m   40m
$0.5 \times 40 =$
$\dfrac{1}{2}$ of 40 $= \underline{20m^2}$

14 Find $\dfrac{4}{7}$ of 490m. $7\overline{)490} = 70$
$70 \times 4 = 280m$

15 Find 22% of £580. 10% = 58   1% = 5.8
20% = 116   2% = 11.6   So 22% = 116 + 11.6
$= £127.60$

16 What is 36cm as a fraction of 1.5m?
$\dfrac{36}{150} = \dfrac{12}{50} = \dfrac{6}{25}$ 150cm
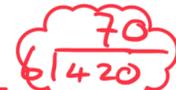
17   What is 12kg as a percentage of 80kg? $\dfrac{12}{80} = \dfrac{6}{40} = \dfrac{3}{20}$

18   Calculate $-10 - 25$ = -35

19   Calculate $-2 \overset{+}{-} 4$ = 2

$\dfrac{15}{100} = 15\%$

20    $-\pounds 420 \div 6 =$ $-£70$ $6\overline{)420}$ = 70

21    $-3 \times -25 =$ 75

22    $(-2)^2 =$ $-2 \times -2 = 4$ Q24   8 years 9 months

23* $-\dfrac{1}{2} \times 0.1 \overset{+}{-} \dfrac{1}{4}$ = $0 \cdot 2$ or $\dfrac{2}{10}$ or $\dfrac{1}{5}$

$\underbrace{}$
$-0 \cdot 5 \times 0 \cdot 1$
$= -0 \cdot 05 + 0 \cdot 25 =$
$= 0 \cdot 25 - 0 \cdot 05 = 0 \cdot 2$

Prime Numbers

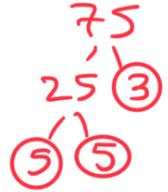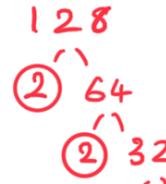| 1	**2**	**3**	4	**5**	6	**7**	8	9	10
11	12	**13**	14	15	16	**17**	18	**19**	20
21	22	**23**	24	25	26	27	28	**29**	30
31	32	33	34	35	36	**37**	38	39	40
41	42	**43**	44	45	46	**47**	48	49	50
51	52	**53**	54	55	56	57	58	**59**	60
61	62	63	64	65	66	**67**	68	69	70
71	72	**73**	74	75	76	77	78	**79**	80
81	82	**83**	84	85	86	87	88	**89**	90
91	92	93	94	95	96	**97**	98	99	100

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Questions:

1 What are the factors of 40? Which of these are prime factors?
   1, ②, 4, ⑤, 8, 10, 20, 40   2 and 5 are prime

2 Which of the following numbers are prime: ⑦ 27, 18, 1, 9, 15, 51, �61

3 Draw a factor tree for the following:

   a   60
   b   150
   c   128
   d   75
   e   1155

   60
   10 6
   ② ⑤ ② ③

   150
   15 10
   ③ ⑤ ② ⑤

   128
   ② 64
   ② 32
   ② 16
   ② 8
   ② 4
   ② ②

   75
   25 ③
   ⑤ ⑤

   1155
   ⑤ 231
   ③ 77
   ⑦ ⑪

   231
   5⟌1155
   77
   3⟌231
   7⟌77

4 Write the following as a product of primes:

   a   80
   b   180
   c   385

   $80 = 2 \times 2 \times 2 \times 2 \times 5$
   $= 2^4 \times 5$

   $180 = 2 \times 2 \times 3 \times 3 \times 5$
   $= 2^2 \times 3^2 \times 5$

   $385 = 5 \times 7 \times 11$

5 What is the highest factor of 60?
   60

6 What is the highest factor of 35?
   35

7 What is the highest factor of both 60 and 35?
   $60 = 2 \times 2 \times 3 \times ⑤$, $35 = 7 \times ⑤$ so $HCF(60, 35) = 5$

8 Which of the following is True or False?

   9 × 9
   a* $2^3 \times 3^2 = 55$ False
   b   51 is a prime number False
   c   The highest common factor of 50 and 25 is 5 False, 25 is a factor
   d   6 is a factor of 660 True
   e   5 is a factor of 5285965 True
   f   10 is a factor of 5005 False

9* Find b
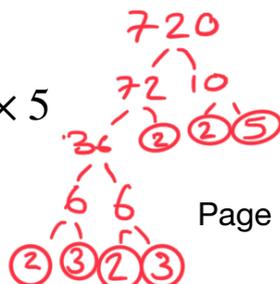
    52
    26 ②
    ② ⑬

    $52 = 13 \times 2^b$

    So $52 = 2 \times 2 \times 13$
    $= 2^② \times 13$ so $\underline{b = 2}$

10* Find x and y

    720
    72 10
    36 ② ② ⑤
    6 6
    ② ③ ② ③

    $720 = 2^x \times 3^y \times 5$

    so $720 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5$
    $= 2^④ \times 3^② \times 5$

    so $\underline{x = 4}$ $\underline{y = 2}$

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11*   Write 360 as a product of primes.

$2 \times 2 \times 2 \times 3 \times 3 \times 5$ or $2^3 \times 3^2 \times 5$

12   Find 75 as a product of primes.

$3 \times 5 \times 5$ or 3×5^2

13*   A number is written as a product of primes as $2^2 \times 3^2 \times 5$. Work out the number. $4 \times 9 \times 5 = 20 \times 9 = \underline{180}$

15*   Given that $f = 2^3 \times 3$ find $10f$. Write $10f$ as a product of primes. $10f = 2^4 \times 3 \times 5$

$8 \times 3 = 24$ $10f = \underline{240}$ 48   56

16   Find the Highest Common Factor or 48 and 56.

(you can also list them) $2 \times 2 \times 2 = \boxed{8}$

17   Write 60 as a product of prime factors.

$60 = 2 \times 2 \times 3 \times 5 = 2^2 \times 3 \times 5$

18   Find the Lowest Common Multiple of 60 and 75.

$60 = \underline{2 \times 2 \times 3 \times 5}$ $75 = 3 \times 5 \times 5$

$LCM = 2 \times 2 \times 3 \times 5 \times 5 = 12 \times 25 = 250 + 50 = 300$

$2 \times 2 \times 2 \times 2 \times 3$ $2 \times 2 \times 2 \times 7$

↳ all factors in both (don't count repeats)

19   Write 132 as a product of primes.

$2 \times 2 \times 3 \times 11$

20   Find the Highest Common Factor of 88 and 132.   44

21**   Given that $90 = 2 \times 3^2 \times 5$ write:

   a   180 as a product of primes $2 \times 2 \times 3 \times 3 \times 5$
   b   270 as a product of primes $2 \times 3 \times 3 \times 3 \times 5$
   c   900 as a product of primes $2 \times 2 \times 3 \times 3 \times 5 \times 5$
   d   the Highest Common Factor of 36 and 90.   18

22***   Find the the Highest Common Factor of y and 5y.   Try examples:

$\boxed{y}$

If $y = 3$
3 and 15 → 3
If $y = 10$
10 and 50 → 10

~~23*   Find the Highest Common Factor of 1008.~~

24   Write 720 as a product of primes. $\boxed{2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5}$

If $y = 6$
6 and 30 → 6

25***   George thinks of two numbers. The Highest Common Factor is 6 and the Lowest Common Multiple is 36. What are the two numbers George is thinking of. $\underline{6 \text{ and } 36.}$

HCF = 6
LCM = 36

6, 12, 18, 24, 30, 36, 42, ...

1, 2, 3, 6, 12, 18, 36

6, 12   HCF = 6   LCM = 12 ✗
6, 18   HCF = 6   LCM = 18 ✗
$\boxed{6, 36 \quad HCF = 6 \quad LCM = 36}$

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