

Homework sheets answers

Homework 1 **1a**

Measuring in centimetres and converting to millimetres

Notice that the digits have moved to the left and a zero has appeared, e.g. 24 cm → 240 mm.

Homework 2 **1a**

Finding possibilities using £1, 10p and 1p coins

Possible arrangements of the 3 coins are: £1, 10p / 1p; £1, 1p / 10p; 10p, 1p / £1; £1 / 10p, 1p; 10p / £1, 1p; 1p / £1, 10p

Homework 3 **1b**

Hundreds, tens and ones

To win, put the largest digits into the highest value columns.

Homework 4 **1b**

Combining hundreds, tens and ones

To make a large total, try to pick lots of £1 coins. They are thicker than the 10p and 1p coins.

Homework 5 **1c**

Comparing volumes

Pour 25 ml from the 225 ml glass into the 175 ml glass.

Pour 50 ml from the 250 ml glass into the 150 ml glass.

Now each glass contains 200 ml of squash.

Homework 6 **1c**

Inequality signs

700 g, 500 g, 85 g, 60 g, 50 g, 45 g

Various comparisons possible.

Homework 10 **2a**

Reducing prices by 39p using adjustment

84p → 45p, 58p → 19p, 97p → 58p, 64p → 25p, 71p → 32p, 87p → 48p

The items now priced at 19p (bricks), 25p (rings), 32p (robot).

Theo bought the items now priced at 45p (teddy) and 32p (robot) or at 58p (train) and 19p (bricks) as they both total 77p.

Homework 11 **2b**

Adding using written methods

$$557 = 134 + 423$$

$$537 = 123 + 414$$

$$555 = 213 + 342$$

$$556 = 244 + 312$$

Homework 12 **2b**

Subtracting 3-digit numbers

209 ml, 272 ml, 86 ml juice left in each jug.

Homework 13 **3a**

Adding 2p, 4p and 8p to create totals

15p not possible

$$16p = 8p + 8p$$

17p not possible

$$18p = 8p + 8p + 2p$$

19p not possible

$$20p = 8p + 8p + 4p$$

You can only make even number totals when combining even numbers (2, 4 and 8 are all even).

16p = 8p + 8p, 8p + 4p + 4p, 8p + 4p + 2p + 2p, 8p + 2p + 2p + 2p + 2p, 4p + 4p + 4p + 4p, 4p + 4p + 4p + 2p + 2p, 4p + 4p + 2p + 2p + 2p + 2p, 4p + 2p + 2p + 2p + 2p + 2p + 2p, 2p + 2p

Homework 16 **3b**

Drawing arrays for multiplication facts

Product of 30: 1×30 , 30×1 , 2×15 , 15×2 , 3×10 , 10×3 , 5×6 , 6×5 ; 4 rectangles

24 also has 4 rectangles and 8 facts; 27 has only 1 rectangle of 1×27 ; 32 has 3 rectangles and 6 facts.

Numbers with lots of factors (or which are in lots of multiplication tables) have more rectangles.

Homework 17 **3c**

School pudding combinations

There are 6 combinations if you can choose 2 items: S + M, S + IC, S + F, M + IC, M + F, IC + F.

There are only 4 combinations if you can choose 3 items: S + M + IC, S + M + F, S + IC + F, M + IC + F.

Homework 18 **3c**

Sharing items fairly

12 can be shared equally between 2, 3, 4, 6 or 12 people.

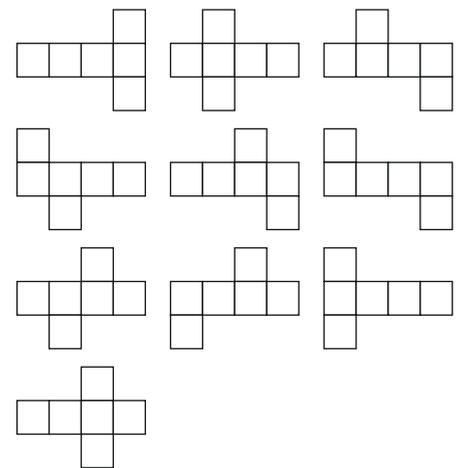
15 can only be shared between 3, 5 and 15 people.

If the number has lots of factors it can be divided by lots of different numbers.

Homework 19 **4a**

Investigating cuboids

Nets of cuboids can have different arrangements but they always have 6 faces, which can be rectangles and perhaps some squares. Nets of cubes also have 6 faces but they are all squares. Examples of nets:



Homework 20 **4a**

Searching for 3-D shapes

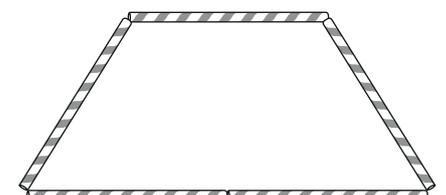
Cylinders and cuboids are usually easier to find than cones and pyramids.

More things fit packaging that is this shape and these shapes are easier to stack.

Homework 22 **4b**

Making 2-D shapes

One example is a trapezium – it has no right angles, 2 angles smaller than a right angle and 2 angles greater than a right angle.



Homework 23 5a

Counting in fours and eights

Amy could set out the room in any of these ways to seat 32 children:

4 4 4 4 4 4 4 4

8 4 4 4 4 4

8 8 4 4 4 4

8 8 8 4 4

8 8 8 8

Joining 4 large tables loses 6 seats, so will now only seat 26 children.

Joining 8 small tables loses 14 seats, so will now only seat 18 children.

It is better to have fewer larger tables.

Homework 25 5b

Making 3-digit numbers with hundreds, tens and ones

You will not make a 3-digit number if you don't pick out any green hundreds counters.

Homework 26 5b

Comparing and ordering numbers

You can make 6 different numbers, assuming the 3 digits rolled are different, e.g. 352, 325, 532, 523, 235, 253.

If a number is repeated, e.g. you roll 1, 3 and 3, you will only be able to make 3 numbers: 133, 313, 331. If you roll 3 numbers the same, e.g. 4, 4 and 4, you will only be able to make 1 number (444)!

Homework 28 5c

Adding tenths to make 1 whole

Orange: $\frac{7}{10}$ water

Blackcurrant: $\frac{8}{10}$ water

Apple: $\frac{9}{10}$ water

Lime: $\frac{9}{10}$ water

Apple: $\frac{3}{10}$ water

$\frac{3}{10}$ apple

Homework 29 6a

Adding multiples of 100

You are more likely to reach 1000 first if you start with a higher number, e.g. 456 is better than 256, but there would be no difference between 412 and 499 as you are only adding hundreds.

You hope to roll big numbers like 5 or 6 because the more hundreds you add, the quicker you will reach 1000.

Homework 30 6a

Adding 3-digit numbers

(A + B) $276 + 293 = 569$, (A + C) $276 + 327 = 603$,

(A + D) $276 + 365 = 641$, (B + C) $293 + 327 = 620$,

(B + D) $293 + 365 = 658$, (C + D) $327 + 365 = 692$

One child should have bags A and D (641). The other should have bags B and C (620) as these combinations have the smallest difference of only 21 beads.

Homework 31 6a

Investigating differences

Look for systematic working. There will be 15 different pairs leading to five differences of 1, four differences of 2, three differences of 3, two differences of 4 and one difference of 5:

$368/369 = 1$, $368/370 = 2$, $368/371 = 3$,
 $368/372 = 4$, $368/373 = 5$

$369/370 = 1$, $369/371 = 2$, $369/372 = 3$,
 $369/373 = 4$

$370/371 = 1$, $370/372 = 2$, $370/373 = 3$

$371/372 = 1$, $371/373 = 2$

$372/373 = 1$

Homework 32 6b

Compare mass by finding differences

Difference between lion and polar bear = 300 kg

Zebra and brown bear difference = 106 kg

Dolphin 250 kg heavier than lion

Dolphin and zebra have smallest difference = 41 kg

Homework 33 7a

Adding multiples of 10

Add 30: 216, 246, 276, 306, 336, 366, 396, 426, 456, 486, 516 ...

The pattern in the tens and ones column repeats every 10 jumps.

Add 40: 216, 256, 296, 336, 376, 416 ...

The pattern in the tens and ones column repeats every 5 jumps.

Homework 34 7a

Add and subtract hundreds, tens and ones

It will not always take the same number of steps if one of the HTO digits in the start number is the same as that of the target number.

The only thing that will reduce the number of steps is if the HT or O digit in the start number is the same as in target number.

Homework 35 7b

Comparing unit and non-unit fractions

$\frac{1}{3} = 8$ cm, $\frac{2}{3} = 16$ cm; $\frac{1}{4} = 6$ cm, $\frac{2}{4} = 12$ cm, $\frac{3}{4} = 18$ cm;
 $\frac{1}{6} = 4$ cm, $\frac{2}{6} = 8$ cm, $\frac{3}{6} = 12$ cm, $\frac{4}{6} = 16$ cm, $\frac{5}{6} = 20$ cm;
 $\frac{1}{8} = 3$ cm, $\frac{2}{8} = 6$ cm, $\frac{3}{8} = 9$ cm, $\frac{4}{8} = 12$ cm, $\frac{5}{8} = 15$ cm,
 $\frac{6}{8} = 18$ cm, $\frac{7}{8} = 21$ cm

Counting up in multiple strings/ links to multiplication tables, e.g. 3, 6, 9, 12, 15, 18, 21, 24 for eighths.

Equivalent fractions: $\frac{1}{3} = \frac{2}{6}$, $\frac{1}{4} = \frac{2}{8}$, $\frac{2}{4} = \frac{3}{6} = \frac{4}{8}$, $\frac{2}{3} = \frac{4}{6}$, $\frac{3}{4} = \frac{6}{8}$

Homework 36 7b

Shading fractions of a rectangle

Only colouring 1 square each time means there are 8 different ways to shade $\frac{1}{8}$.

There are 28 ways to shade 2 squares.

Shading $\frac{6}{8}$ would give the same answers and arrangements as for $\frac{2}{8}$, but those left unshaded for $\frac{6}{8}$ would be shaded for $\frac{2}{8}$.

Homework 37 7b

Fraction puzzle

Annabelle $\frac{1}{4}$ of 12 = 3 pieces

Freddie $\frac{1}{6}$ of 12 = 2 pieces

Kapil $\frac{1}{3}$ of 12 = 4 pieces

Left 3 pieces = $\frac{1}{4}$

Freddie 2 pieces = $\frac{1}{6}$

Homework 38 7c

Adding tenths to make a whole

$\frac{1}{10} + \frac{9}{10}$, $\frac{2}{10} + \frac{8}{10}$, $\frac{3}{10} + \frac{7}{10}$, $\frac{4}{10} + \frac{6}{10}$, $\frac{5}{10} + \frac{5}{10}$

Homework 39 8a

Halving prices

Dress £24, long-sleeved top £13, trousers £17, t-shirt £8, shoes £32, bag £27

Mum could choose various combinations:

Shoes, trousers, t-shirt: £57; Shoes, long-sleeved top, t-shirt: £53; Bag, dress, t-shirt: £59; Bag, trousers, long-sleeved top: £57; Bag, trousers, t-shirt: £48; Bag, long-sleeved top, t-shirt: £48; Dress, trousers, long-sleeved top: £54; Dress, trousers, t-shirt: £49; Dress, long-sleeved top, t-shirt: £45; Trousers, long-sleeved top, t-shirt: £38

Buy everything in sale for £121.

Mum needs another £61.

Homework 41 8b

Ways to multiply by 5 and 20

Numbers out: 10, 20, 25, 50, 60, 100

Single function is '×5'

'×20' could replace '×10 and then double'

Homework 42 8b

Multiplying by 10 and 100

4 thick branches: 40 small twigs

7 thick branches: 700 green leaves

600 green leaves: 6 thick branches

80 small twigs: 8 thick branches and 800 green leaves

There are 10 times as many small twigs as thick branches and 10 times as many green leaves as small twigs. So there are 100 times as many green leaves as thick branches.

Homework 43 8c

Scaling up and down

Twice as big:
rectangles 4×8 cm, 6×12 cm, 8×20 cm

Half the size:
rectangles 1×2 cm, 1.5×3 cm, 2×5 cm

Homework 44 8c

Missing numbers

8

Homework 46 9a

Types of straight lines

All the lines will be in more than 1 colour as the parallel lines are also either horizontal or vertical and some are also perpendicular to another line.

Homework 48 9b

Using turning vocabulary

There is a tendency to do $\frac{1}{4}$ turns anticlockwise or clockwise rather than using $\frac{3}{4}$ turns. $\frac{1}{2}$ turns just take you back in the opposite direction so are less useful when directing a path (as are whole turns).

Homework 49 10a

Writing 3-digit numbers in words

three hundred and twenty-five, four hundred and forty-seven, two hundred and twenty-one, one hundred and ninety, three hundred and fifty-two, one hundred and forty-seven

Stand 2 has the most. Stand 4 is made of only hundreds and tens. Stand 5 has more fans than stand 1. There are 300 fewer in stand 6 than stand 2.

Homework 51 10b

Partitioning 3-digit numbers into multiples of 10

Estimates should be high as there will be lots of combinations.

Homework 53 11a

Adding 3-digit numbers using mental methods

Washers 480, spark plugs 289, oil 770 litres, screws 579. As the numbers of screws and washers is different, they need to order another 99 washers.

Homework 54 11a

Adding 3-digit numbers using written methods

Tiger 527 pounds (239 kg), lion 345 pounds (156 kg), puma 180 pounds (82 kg), leopard 124 pounds (56 kg), hyena 95 pounds (43 kg), lynx 21 pounds (10 kg)

Homework 55 11a

Counting up to find a difference

Order: 33 baked beans, 217 pasta, 143 lemonade, 278 juice. Largest reorder: juice.

Homework 56 11b

Subtracting 3-digit numbers using written methods

Odd and even is a fair game as there is a 50/50 chance of it being either.

Homework 60 12b

Halves, quarters and eighths

$\frac{1}{2}$ of 16 cm = 8 cm; leftover 8 cm = $\frac{1}{2}$ of 16 cm

$\frac{1}{4}$ of 16 cm = 4 cm; leftover 12 cm = $\frac{3}{4}$ of 16 cm

$\frac{1}{8}$ of 16 cm = 2 cm; leftover 14 cm = $\frac{7}{8}$ of 16 cm

$\frac{3}{5}$ of 16 cm = 12 cm; leftover 4 cm = $\frac{1}{4}$ of 16 cm

$\frac{5}{8}$ of 16 cm = 10 cm; leftover 6 cm = $\frac{3}{8}$ of 16 cm

Homework 61 12c

Fractions equivalent to $\frac{1}{4}$

Might choose $\frac{1}{4}, \frac{2}{8}, \frac{3}{12}, \frac{4}{16}, \frac{5}{20}$. The numerators increase by 1 and the denominators increase by 4/counting in fours. The pattern is 1, 2, 3, 4, 5 for the numerators and 4, 8, 12, 16, 20 for the denominators.

A rectangle split into 24 parts will have 6 parts shaded.

Homework 62 12c

Adding and subtracting eighths

16; $\frac{16}{8}$ or 2 wholes

Homework 63 13a

Grid method of multiplication

Total cost of Package 1 = £780, Package 2 = £456. So Package 1 is £324 more.

Package 2 plus lunch = £456 + £450 = £906, so it is cheaper to buy Package 1 with all meals included.

Homework 64 13a

Written multiplication methods

The answers get bigger because the chosen number is multiplied by a bigger number each time so the product is also larger.

The difference between the answers is equal to the chosen number, e.g. with 42 each answer is 42 more than the previous answer.

Multiplying by 7 will add one more of the chosen number, e.g. 42, to the answer found when multiplying the chosen number by 6.

Homework 65 13b

Using arrays to show divisions

$36 \div 36 = 1$, $36 \div 1 = 36$, $36 \div 18 = 2$, $36 \div 2 = 18$,
 $36 \div 12 = 3$, $36 \div 3 = 12$, $36 \div 9 = 4$, $36 \div 4 = 9$,
 $36 \div 6 = 6$

There are 2 divisions for each rectangle, except for the 6×6 special rectangle which is a square and only has 1 division.

37 only has 1 rectangle (1×37), so it will only have 2 divisions: $37 \div 1 = 37$ and $37 \div 37 = 1$.

37 is a prime number with only 2 factors, 1 and itself. Although the children have not yet learnt this vocabulary it may be useful for the parents.

Homework 66 13b

Compact division

To get the longest length, find the largest fraction of the largest amount, so $\frac{96}{3} = 23$, $\frac{90}{4} = 23$, $\frac{84}{5} = 17$,
 $\frac{76}{6} = 13$ (rounded to nearest whole number):
 $32 + 23 + 17 + 13 = 85$

To get the shortest length, find the smallest fraction of the largest amount, so $\frac{96}{6} = 16$, $\frac{90}{5} = 18$,
 $\frac{84}{4} = 21$, $\frac{76}{3} = 25$ (rounded):
 $16 + 18 + 21 + 25 = 80$

Homework 69 14b

Shapes with the same area but different perimeters

A 3×4 rectangle has a perimeter of 14 cm, a 2×6 rectangle has a perimeter of 16 cm, a 1×12 rectangle has a perimeter of 26 cm. The children will have drawn plenty of other composite shapes.