



PROGRESSION IN WRITTEN DIVISION

Pre-learning 1

Practical and informal written methods using concrete objects and pictorial representations

(see Models and Images poster)

Represent as sharing and grouping:

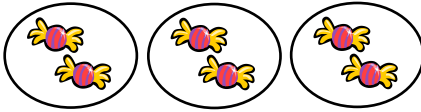
Sharing

6 sweets are shared between 2 people. How many do they have each?



Grouping

There are 6 sweets. How many people can have 2 each? (How many 2s make 6?)

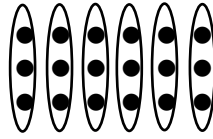


Pre-learning 2

TU÷U (no remainder) using concrete objects, pictorial representations and mentally

Arrays

(model using counters and peg boards)

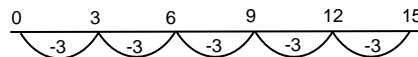
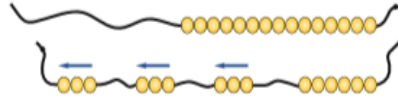


18 grouped into 3s makes 6 groups
 $18 \div 3 = 6$

Repeated subtraction

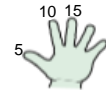
(model on a bead string, number line and peg board)

$$15 \div 3 = 5$$



Relate to multiplication tables

Counting in 2s, 5s and 10s.



How many 5s in 15?

Use inverse operation:

$$5 \times 4 = 20$$
$$20 \div 4 = 5$$

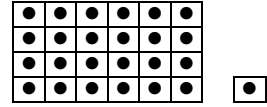
Y3

TU÷U (including remainder) using concrete objects, pictorial representations and mentally

Arrays

(model using counters and peg boards)

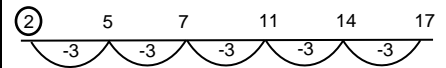
$$25 \div 4 = 6 \text{ r.}1$$



Repeated subtraction

(model on a bead string, number line and real objects)

$$17 \div 3 = 5 \text{ r.}2$$



Relate to multiplication tables



How many 3s in 15?

Group of four facts:

$$7 \times 4 = 28 \quad 28 \div 4 = 7$$
$$4 \times 7 = 28 \quad 28 \div 7 = 4$$

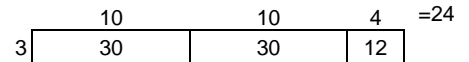
Derive related facts:

$$20 \times 3 = 60 \quad 60 \div 3 = 20$$

Two-digit ÷ one-digit

(model using an array)

$$72 \div 3 = 24$$



Y4

Written method for TU÷U (no remainder) and informal method for TU÷U (including remainder)

Two-digit ÷ one-digit (no remainder)

(model using an array)

$$72 \div 3 = 24$$

$$\begin{array}{r} 24 \\ 3 \overline{) 72} \\ \underline{30} \quad (3 \times 10) \\ 42 \\ \underline{30} \quad (3 \times 10) \\ 12 \\ \underline{12} \quad (3 \times 4) \\ 0 \end{array}$$

Leading to...
 $72 \div 3 = 24$

$$\begin{array}{r} 24 \\ 3 \overline{) 72} \\ \underline{60} \quad (3 \times 20) \\ 12 \\ \underline{12} \quad (3 \times 4) \\ 0 \end{array}$$

Leading to...
 $72 \div 3 = 24$

$$\begin{array}{r} 20 + 4 = 24 \\ 3 \overline{) 60 + 12} \end{array}$$

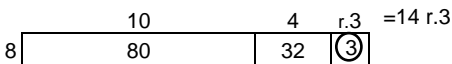
Leading to...
 $72 \div 3 = 24$

$$\begin{array}{r} 24 \\ 3 \overline{) 72} \end{array}$$

Two-digit ÷ one-digit (including remainder)

(model using an array)

$$115 \div 8 = 14 \text{ r.}3$$



Y5

Written method for HTU÷U (including remainder) and HTU÷TU (no remainder)

Short division (including remainder)

Answer written as a remainder:

$$432 \div 5 = 86 \text{ r.}2 \quad \begin{array}{r} 86 \text{ r.}2 \\ 5 \overline{) 432} \end{array}$$

Answer written as a fraction:

$$432 \div 5 = 86 \frac{2}{5} \quad \begin{array}{r} 86 \frac{2}{5} \\ 5 \overline{) 432} \end{array}$$

Answer written as a decimal:

$$432 \div 5 = 86.4 \quad \begin{array}{r} 86.4 \\ 5 \overline{) 432.0} \end{array}$$

Long division (no remainder)

$$420 \div 15 = 28$$

$$\begin{array}{r} 28 \\ 15 \overline{) 420} \\ \underline{300} \quad (15 \times 20) \\ 120 \\ \underline{120} \quad (15 \times 8) \\ 0 \end{array}$$

Encourage pupils to note key facts:
 $15 \times 2 = 30$
 $15 \times 10 = 150$
 $15 \times 5 = 75$

Y6

Written method for ThHTU÷U and ThHTU÷TU (including remainder)

Short division (including remainder)

Answer written as a remainder:

$$3645 \div 6 = 607 \text{ r.}3 \quad \begin{array}{r} 607 \text{ r.}3 \\ 6 \overline{) 3645} \end{array}$$

Answer written as a fraction:

$$3645 \div 6 = 607 \frac{3}{6} \text{ or } 607 \frac{1}{2} \quad \begin{array}{r} 607 \frac{3}{6} \\ 6 \overline{) 3645} \end{array}$$

Answer written as a decimal:

$$3645 \div 6 = 607.5 \quad \begin{array}{r} 607.5 \\ 6 \overline{) 3645.0} \end{array}$$

Long division (including remainder)

$$1932 \div 17 =$$

$$\begin{array}{r} 113 \text{ r.}11 \\ 17 \overline{) 1932} \\ \underline{1700} \quad (17 \times 100) \\ 232 \\ \underline{202} \\ 30 \\ \underline{30} \\ 0 \end{array}$$

Encourage pupils to note key facts:
 $17 \times 2 = 34$
 $17 \times 10 = 170$
 $17 \times 5 = 85$

Write answer as 113 r.11 or $113 \frac{11}{17}$