

Pencil and paper procedures (division)

As outcomes, Year 5 pupils should, for example:

Informal written methods

Use pencil and paper methods to support, record or explain calculations, achieving consistent accuracy. Discuss, explain and compare methods.

Approximate first. Explain orally how method works.

A: using multiples of the divisor

HTU ÷ U

$256 \div 7$ lies between $210 \div 7 = 30$ and $280 \div 7 = 40$.

$$\begin{array}{r}
 256 \div 7 \qquad 256 \\
 - \quad 70 \qquad 10 \times 7 \\
 \hline
 186 \\
 - \quad 140 \qquad 20 \times 7 \\
 \hline
 46 \\
 - \quad 42 \qquad 6 \times 7 \\
 \hline
 4 \\
 \text{Answer:} \qquad 36 \text{ remainder } 4
 \end{array}$$

Standard written methods

Continue to develop an efficient standard method that can be applied generally, approximating first. Where calculations are set out in columns, know that units should line up under units, tens under tens...

B: short division HTU ÷ U

$196 \div 6$ is approximately $200 \div 5 = 40$.

$$\begin{array}{r}
 \overline{6) 196} \\
 - \underline{180} \quad 30 \times 6 \\
 \quad 16 \\
 - \underline{12} \quad 2 \times 6 \\
 \quad \quad 4 \\
 \text{Answer: } 32 \text{ R } 4
 \end{array}
 \qquad
 \begin{array}{r}
 \quad \quad 32 \text{ R } 4 \\
 6 \overline{) 196} \\
 \quad \underline{18} \\
 \quad \quad 16 \\
 \quad \quad \underline{12} \\
 \quad \quad \quad 4
 \end{array}$$

Answer: 32 R 4

See also understanding remainders (page 57).

As outcomes, Year 6 pupils should, for example:

Informal written methods

Use pencil and paper methods to support, record or explain calculations, achieving consistent accuracy. Discuss, explain and compare methods.

Approximate first. Explain orally how method works.

A: using multiples of the divisor

HTU ÷ TU

$977 \div 36$ is approximately $1000 \div 40 = 25$.

$$\begin{array}{r}
 977 \div 36 \qquad 977 \\
 - \quad 360 \qquad 10 \times 36 \\
 \hline
 617 \\
 - \quad 360 \qquad 10 \times 36 \\
 \hline
 257 \\
 - \quad 180 \qquad 5 \times 36 \\
 \hline
 77 \\
 \quad \underline{72} \qquad 2 \times 36 \\
 \quad \quad 5 \\
 \text{Answer:} \qquad 27\frac{5}{36}
 \end{array}$$

Standard written methods

Continue to develop an efficient standard method that can be applied generally, approximating first. Where calculations are set out in columns, know that units should line up under units, tens under tens...

B: long division HTU ÷ TU

$972 \div 36$ is approximately $1000 \div 40 = 25$.

$$\begin{array}{r}
 \overline{36) 972} \\
 - \underline{720} \quad 20 \times 36 \\
 \quad 252 \\
 - \underline{252} \quad 7 \times 36 \\
 \quad \quad 0 \\
 \text{Answer:} \quad 27
 \end{array}
 \qquad
 \begin{array}{r}
 \quad \quad 27 \\
 36 \overline{) 972} \\
 \quad \underline{72} \\
 \quad \quad 252 \\
 \quad \quad \underline{252} \\
 \quad \quad \quad 0
 \end{array}$$

Extend to decimals with up to two decimal places

Approximate first. Know that decimal points should line up under each other.

$87.5 \div 7$ is approximately $80 \div 8 = 10$.

$$\begin{array}{r}
 \overline{7) 87.5} \\
 - \underline{70.0} \quad 10 \times 7 \\
 \quad 17.5 \\
 \quad \underline{14.0} \quad 2 \times 7 \\
 \quad \quad 3.5 \\
 \quad \quad \underline{3.5} \quad 0.5 \times 7 \\
 \quad \quad \quad 0.0 \\
 \text{Answer:} \quad 12.5
 \end{array}$$

See also understanding remainders (page 57).