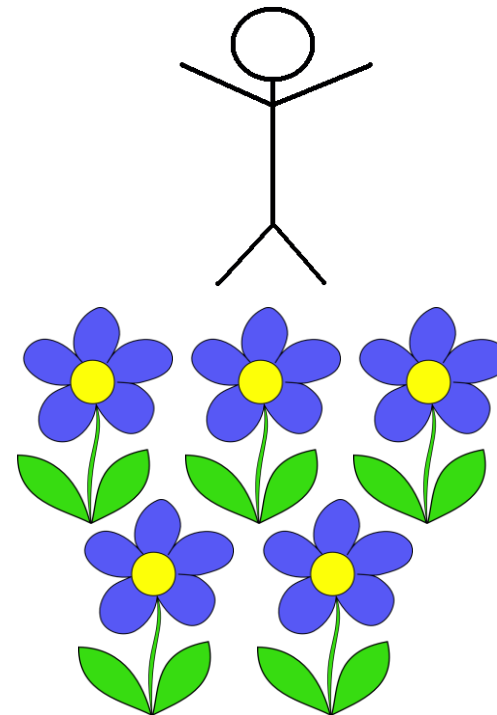
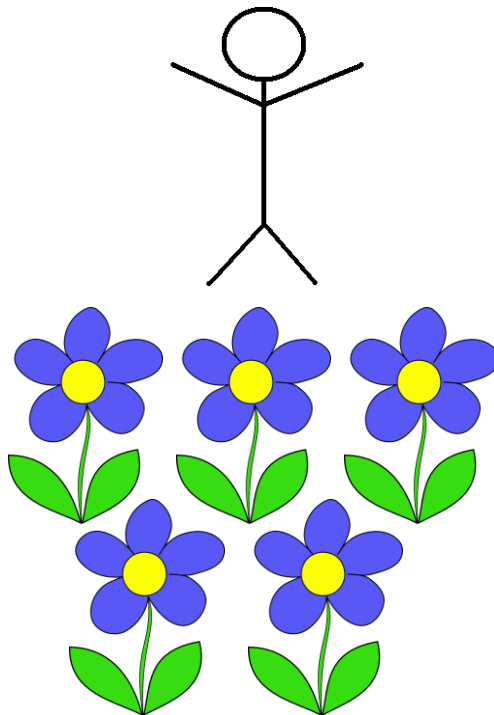
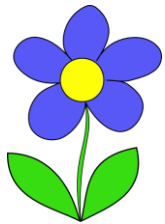


Division

When learning division, children may come across numbers that do not fit into a group or share equally between amounts (remainders). At Goring, we believe that it is important children learn through exploring mathematical concepts and we therefore aim to ensure that division with remainders is not taught separately. Instead we hope that by choosing their own division calculations and physically sharing or representing this through drawings, children will naturally begin to understand that division calculations may include remainders.

$$11 \div 2 = 5 \text{ remainder } 1$$

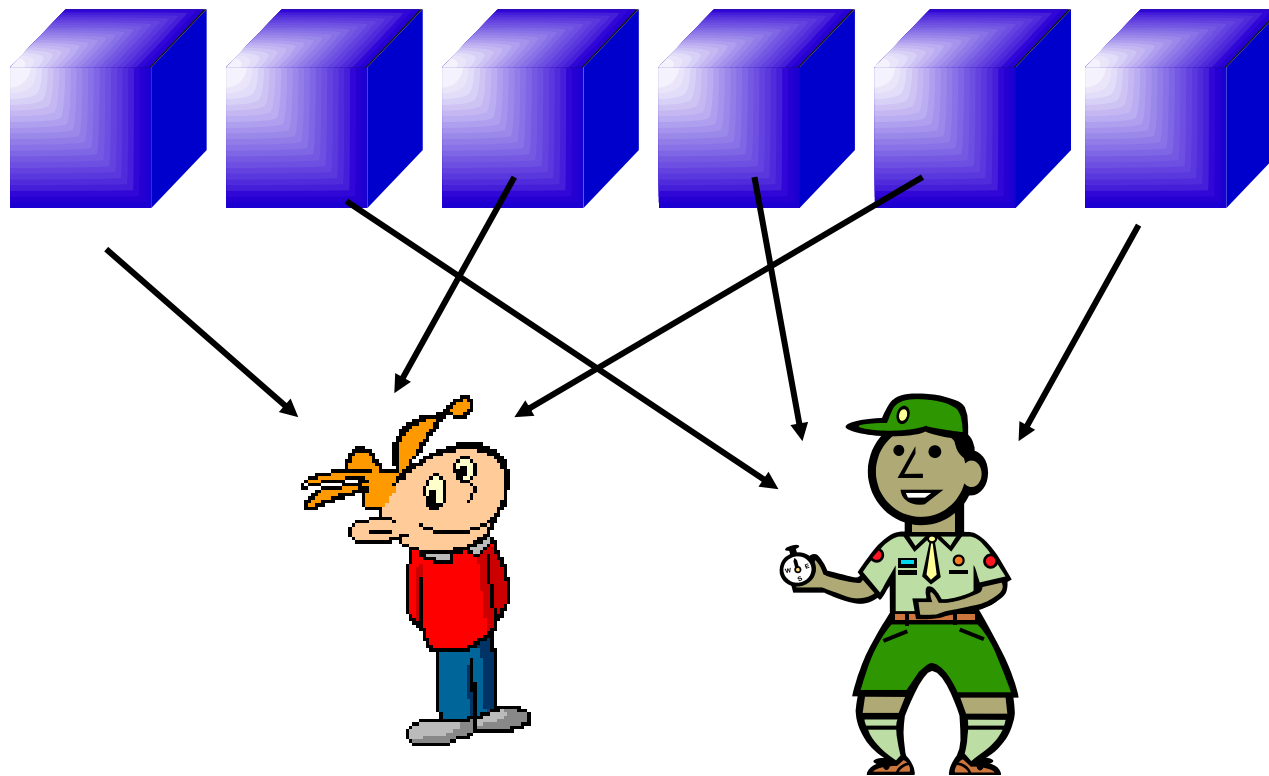


Division: Stage 1

At stage 1 children are introduced to division as sharing. As with other calculations, practical equipment and images are imperative to providing a secure foundation for division and children are not expected to use numerals or operation signs unless they are able to associate them with a value or operation.

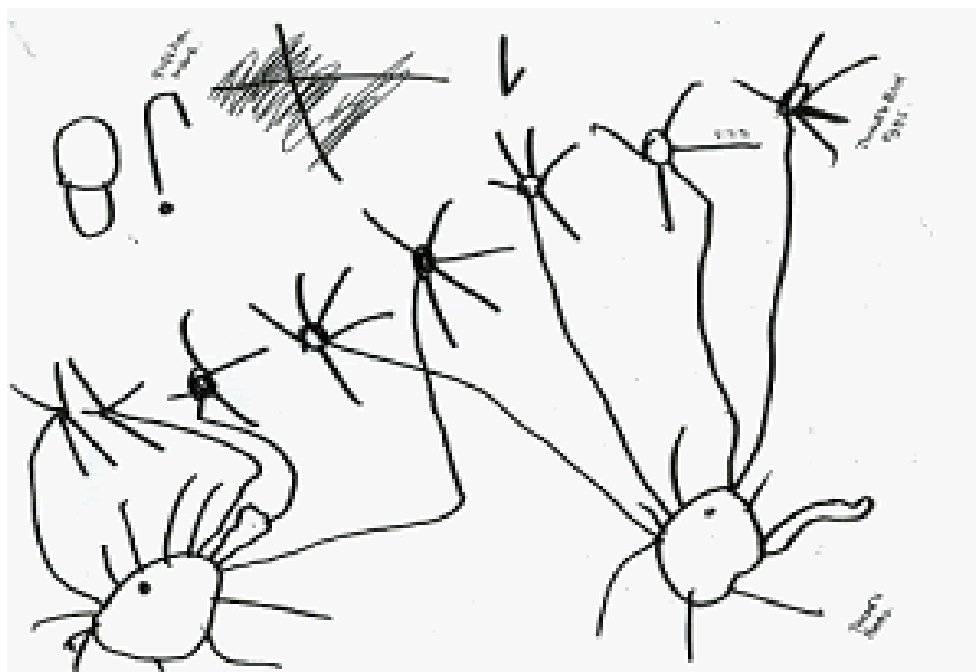
Practical understanding at stage 1

Children will physically share out objects, one at a time, until all the objects have been shared equally.



Informal recording at stage 1

Children will choose how they represent their own division calculations and are encouraged to explain what it shows. A teacher or adult may model a number sentence but the children are not expected to record using numerals or operation signs.



8 shared between 2

Division: Stage 2

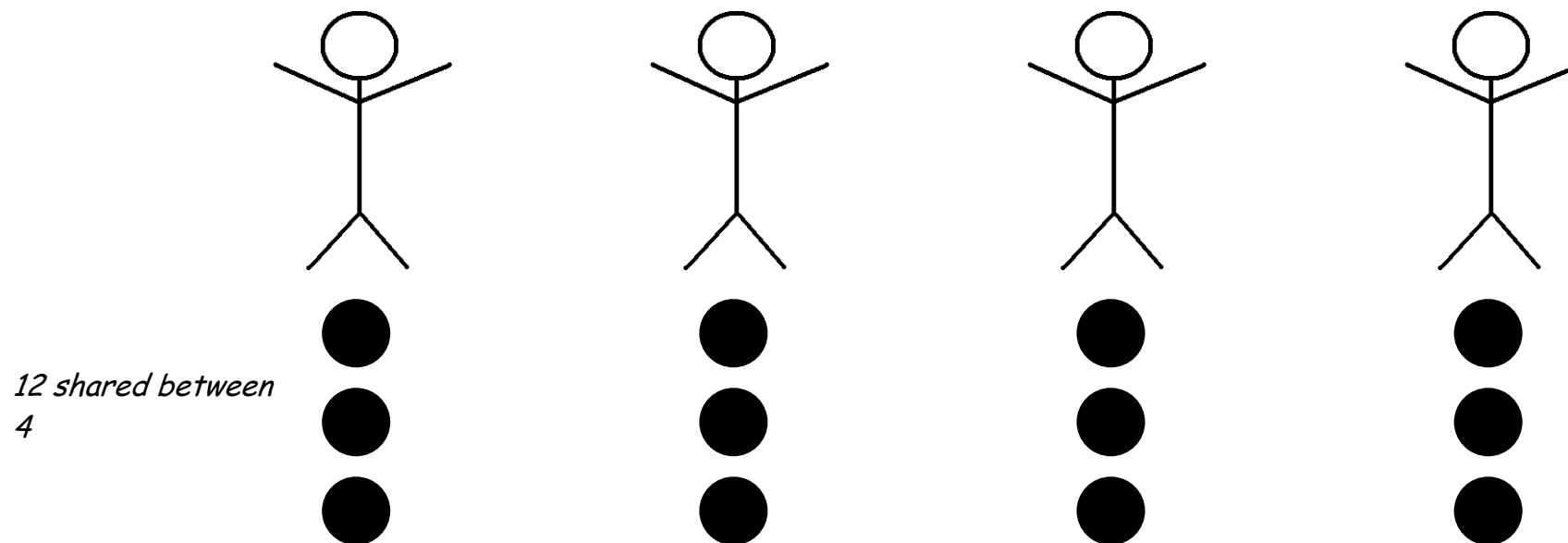
Practical equipment and images are still incredibly important at this stage and children may begin to use signs and numerals to record their number sentences.

Practical understanding at stage 2

Children will continue as in stage 1 sharing between an amount. They may begin to understand that sharing between 2 people is the same as half.

Informal recording at stage 2

Children will record as they deem appropriate to show their understanding. They will be shown ways to lay their work out clearly, e.g. by drawing people and sharing dots.



Division: Stage 3

Practical equipment and images are still incredibly important at this stage and children are now beginning to use signs and numerals to record their number sentences. Children will be introduced to the division symbol and understand this as sharing a number. They will begin to associate division as the inverse of multiplication and use this knowledge to learn number facts off by heart, which in turn supports their mental calculations. Equipment and images similar to multiplication will be used to reinforce the understanding of inverse operations.

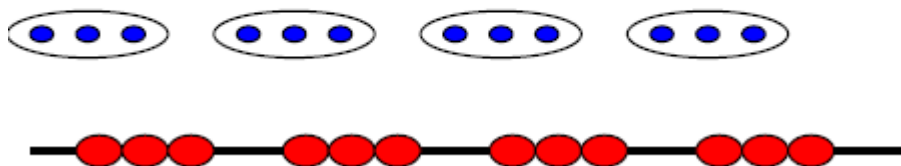
It is hoped by stage 3 that children are becoming more confident with their mental calculations. Children therefore need to be able to understand and access the following before moving towards other stages of calculations involving division.

- Understand division as sharing equally (whilst recognising that there may be a remainder).
- Know that halving is the same as sharing between 2.
- Understand that division is the inverse of multiplication.
- Understand that division by 1 leaves a number unchanged.

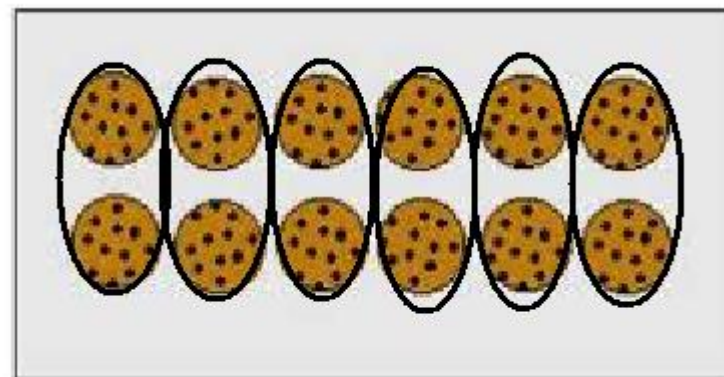
Practical understanding at stage 3

Children will continue to access equipment to support their division and will be introduced to grouping as well as sharing to divide.

$$12 \div 3$$



12 into groups of 3 is 4 ($12 \div 3 = 4$)



12 into groups of 2 is 6 ($12 \div 2 = 6$)



9 into groups of 3 is 3 ($9 \div 3 = 3$)

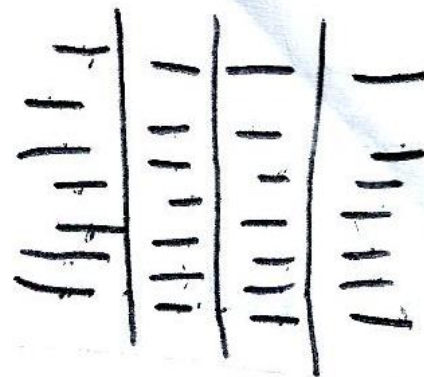
Informal recording at stage 3

Children will continue to represent division using their own representations.

$$21 \div 3 = 7$$



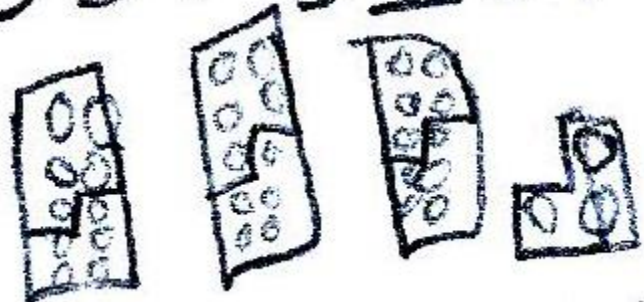
$$28 \div 4 = 7$$



Top: Examples of representation through sharing

Bottom left: Example of representation through grouping

$$33 \div 5 = 6 \text{ r } 3$$



$$4 \times 6 = 24$$

$$6 \times 4 = 24$$

Example of representation using known multiplication facts to support division with remainders.

1 left

Division: Stage 4

Practical equipment and images are still incredibly important at this stage and children are now beginning to use signs and numerals more independently to record their number sentences. Children will continue to use sharing and grouping to support their understanding of division and will use their knowledge of arrays to support this further.

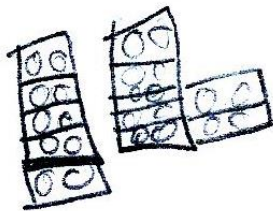
Practical understanding at stage 4

Children will continue to access practical equipment as above in stages 1, 2 and 3. Please note that it is important children have this support at *all times* throughout their mathematics development and working practically should be encouraged when needed.

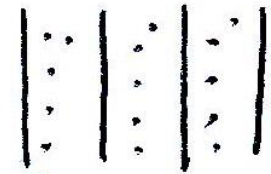
Informal recording at stage 4

Children will continue to record maths in methods they deem appropriate.

$$24 \div 2 = 12$$

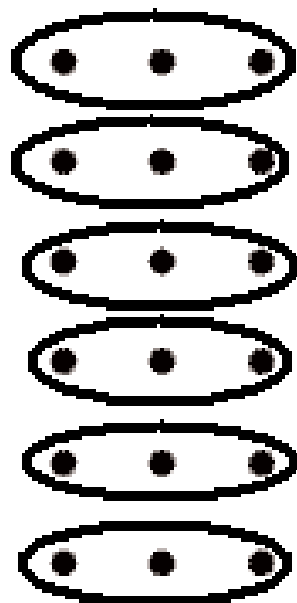


$$15 \div 3 = 5$$

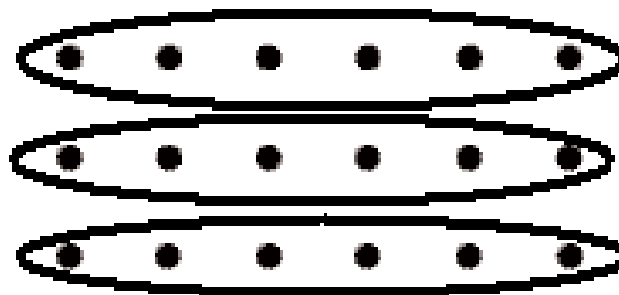


Formal recording at stage 4

To reinforce division and multiplication as inverse operations, children will be introduced to drawing arrays to support their division. Children will begin to be encouraged to check their results using their knowledge of multiplication facts.



$$18 \div 3 = 6$$



$$18 \div 6 = 3$$

Division: Stage 5

Practical understanding at stage 5

Children will continue to access practical equipment. Children will have this support at *all times* throughout their mathematics development and working practically should be encouraged when needed.

Informal recording at stage 5

Informal recording is less common at this stage as children should have a secure understanding of methods taught at stage 4.

Practical equipment and images are still incredibly important at this stage and children are now beginning to use signs and numerals to record their number sentences. Children continue to use arrays, sharing and grouping to support their understanding of division and will begin to automatically use their knowledge of multiplication facts to make mental calculations quicker.

Formal recording at stage 5

In order to gain confidence working with larger division calculations, children will continue to use their knowledge of multiplication to support their understanding of division. They will learn the following formal written method using multiples of the divisor to find an answer.

$$96 \div 6 =$$

$$\begin{array}{r} 96 \\ - 60 \\ \hline 36 \\ - 36 \\ \hline 0 \end{array} \quad \begin{array}{l} (6 \times \underline{10}) \\ (6 \times \underline{6}) \end{array}$$

Answer: 16

$$78 \div 5 =$$

$$\begin{array}{r} 78 \\ - 50 \\ \hline 28 \\ - 25 \\ \hline 3 \end{array} \quad \begin{array}{l} (5 \times \underline{10}) \\ (5 \times \underline{5}) \end{array}$$

Answer: 15 remainder 3