Division as sharing and grouping

You have a pile of things and want equal groups. Division tells you how many in each group, or how many groups.

WORDS TO KNOW

Divide (÷): split a total into equal groups.

Grouping: you know how many go in each group. You find how many groups.

Sharing: you know how many groups. You find how many go in each group.

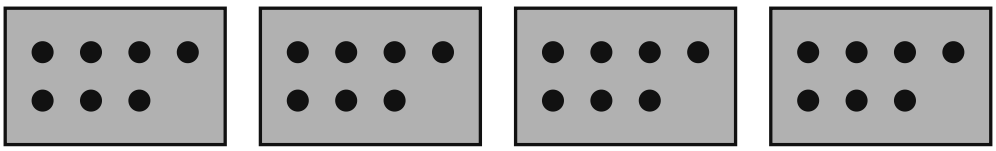
Quotient: the answer to a division.

KEY IDEAS

1. Sharing: deal them out one at a time

Four friends share some beads. Give one bead to each friend, then go around again. Stop when the beads run out. Count the beads one friend has.

Sharing: you know the number of groups. Find how many in each group.

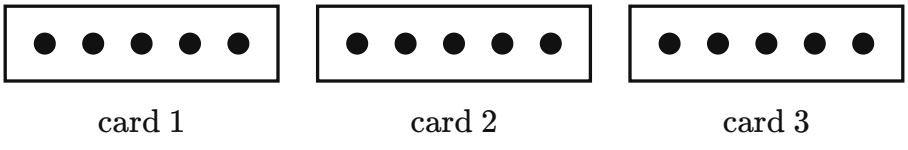


friend 1 friend 2 friend 3 friend 4

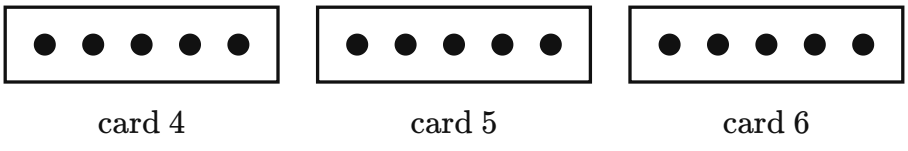
2. Grouping: fill one group at a time

Each card holds 5 buttons. Fill a card, then the next card. Stop when the buttons run out. Count the cards.

Grouping: you know how many in each group. Find the number of groups.



card 1 card 2 card 3



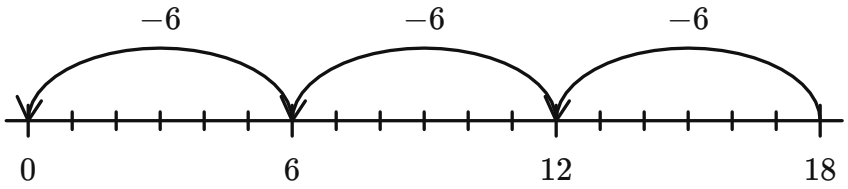
card 4 card 5 card 6

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3. Take away groups until none are left

Grouping is also taking away. Take away one group again and again. Each jump back takes away one group. Count the jumps.

> Count the take-aways. That is the number of groups.
>
> Check by multiplying: groups $\times$ how many in each group $=$ the total.



WATCH OUT

- **The groups must be equal.** Piles of different sizes are not a division.
- **Take away until you reach 0.** Count every take-away, even the last one.
- **The total comes first.** 30 crayons for 3 kids is $30 \div 3$, not $3 \div 30$.

WORKED EXAMPLES

Example 1. 30 crayons are shared equally among 3 kids. How many crayons does each kid get?

1. You know the groups: 3 kids. So this is sharing.
2. Ask: 3 groups of what number make 30?
3. 3 × 10 = 30, so each group has 10.

Answer: 10 crayons each, so 30 ÷ 3 = 10. **Check:** 10 + 10 + 10 = 30.

Example 2. 30 crayons go in boxes, 10 in each box. How many boxes are filled?

1. You know how many go in each box: 10. So this is grouping.
2. Take away 10 again and again, until none are left.

$$30 - 10 = 20, \quad 20 - 10 = 10, \quad 10 - 10 = 0$$

3. You took away 3 times. That is 3 boxes.

Answer: 3 boxes, so 30 ÷ 10 = 3. **Check:** 3 × 10 = 30.

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