

How many flowers make a jar?

Every jar of honey is made from a lot of flowers and a lot of flying. Work through the steps to find out how many.



Warm up

A bee visits 80 flowers on one trip. How many flowers on...

2 trips _____ 5 trips _____ 10 trips _____ 100 trips _____

1 From nectar to honey

Bees make honey by drying out nectar. To fill one 454 g jar of honey, they need about **1 kg** of nectar.

How many grams is 1 kg? _____ g

2 Trips home

A forager carries about **40 mg** of nectar home on each trip. There are 1,000 mg in a gram, so 1 kg is **1,000,000 mg**.

How many trips to carry 1 kg? $1,000,000 \div 40 =$ _____ trips

Hint: how many 40s make 1,000? Now make it 1,000 times bigger.

3 Flowers

On each trip she visits about **80 flowers**.

How many flowers for one jar? your answer to $2 \times 80 =$ _____ flowers

4 Miles in the air

Each trip, there and back, is about **2 km**. The Earth is about **40,000 km** all the way round.

How far do the bees fly for one jar? _____ km

Is that further than once round the Earth? _____

5 Just one bee?

A forager can make about **10 trips a day**. In summer, a worker bee lives for about **6 weeks**.

How many days would one bee need for all the trips? _____ days

So how does the jar ever get filled? _____

These are rounded, "about right" numbers. Real bees vary a lot: some trips take a few flowers, some take hundreds.

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What pupils learn

- Working with large numbers, place value, and converting between kg, g and mg.
- Multiplying and dividing by multiples of 10, and chaining steps together.
- How much work goes into food, and why one bee can't do it alone.

Links to the curriculum

- **Maths:** place value to 1,000,000 and beyond; multiplication and division; converting units of mass and length; solving multi-step problems.
- **Science:** plants and pollination; how animals get food.

Differentiation

- **Younger pupils:** the warm-up and steps 1 and 3, using the given trip number (25,000) with a calculator.
- **Older pupils:** all steps, then estimate how many bees share the work (see step 5).

Answers

Step	Answer
Warm up	160, 400, 800, 8,000 flowers
1	1,000 g
2	25,000 trips (there are 25 forties in 1,000)
3	$25,000 \times 80 = 2,000,000$ flowers: two million
4	$25,000 \times 2 = 50,000$ km. Yes, about $1\frac{1}{4}$ times round the Earth
5	$25,000 \div 10 = 2,500$ days, nearly 7 years. A summer bee lives about 6 weeks (42 days), so thousands of bees share the job. A strong colony has tens of thousands of foragers over a summer.

About the numbers

All figures are rounded averages. Nectar is often around half water and honey is under a fifth water, so bees need roughly twice the weight of nectar. A nectar load is usually 20 to 40 mg, and flowers per trip vary from a handful (lime trees) to several hundred (clover).

Going further

Read *From flower to jar* at bassitt.co.uk/learn/bee-basics, and look up which flowers are out this month on the forage calendar at bassitt.co.uk/learn/forage-calendar.