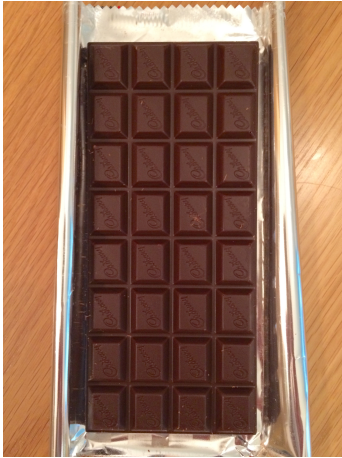


## CHOCOLATE



Your Granny bought a bar of chocolate marked into 32 pieces and weighing 180 grams.

How many pieces make half the chocolate bar?

How many pieces make one quarter?

What fraction of the bar is one piece of chocolate?

She gave you and your sister 2 pieces each to eat. What fraction have you and your sister eaten?

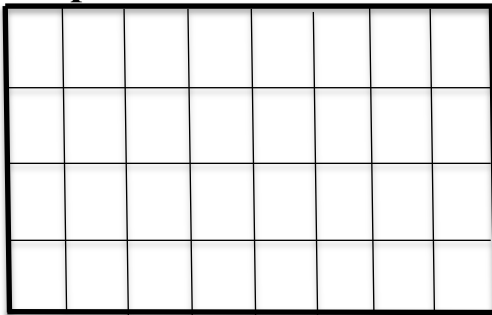
How many pieces are left? What fraction of the bar is that?

Granny needs 90 grams of chocolate to make a birthday cake for you. How many pieces of chocolate will she use and how many pieces will be left over? What fraction of the bar is left?

Will there be enough chocolate left for the six members of your family each to eat 2 pieces of chocolate and if so will there be any chocolate left after that?

Now make up your own story about the chocolate in which you ask some questions about fractions and the masses of some of the pieces.

## Help



Use this diagram for counting the pieces and marking in the fractions.

### Ingredients for 15 cupcakes

3 eggs  
 caster sugar  
 margarine or unsalted butter  
 self raising flour  
 55g cocoa powder

### Extension

Here is a recipe for chocolate cupcakes for 15 people. Read the instructions. What ingredients would you need to make enough cakes for your whole class? You will need to weigh your eggs to find out how much sugar, margarine and flour to use.



1. Weigh your three eggs with their shells. Take that weight and measure the same amount each for the sugar, margarine and flour. Weigh the flour last. (For example, if the eggs weigh 200g, then the flour should weigh 200g, the sugar 200g and the same for the margarine.)
2. For the flour, remove 55g from the weight you measured to match the weight of the 3 eggs. Instead of the flour add 55g of cocoa powder. Combine the flour and cocoa.
3. Preheat the oven to 170 C / Gas 3. Put paper cases into a patty pan or grease the pan so the cupcakes will come out easily.
4. Put all of the margarine and sugar into a large mixing bowl. Cream together until pale, creamy and fluffy.
5. Crack the eggs into a bowl and add to the margarine/sugar mixture and stir to mix in.
6. Sieve a couple of tablespoons of flour-cocoa mixture at a time into the mixing bowl with the other ingredients and beat to get air into the mixture to make the sponge lighter.
7. Divide the mixture evenly between the cupcake cases.
8. Bake in the preheated oven for 10 minutes. To make sure the cakes are cooked, use your fingers to very lightly press on the top of a cupcake. It should feel spongy and spring back up. If not the cup cakes may need a few more minutes in the oven.

## NOTES FOR TEACHERS

### SOLUTION

16 pieces make half the bar  $\frac{1}{2}$ .

8 pieces make one quarter  $\frac{1}{4}$ .

One piece of chocolate is one thirty second  $\frac{1}{32}$ .

You and your sister have eaten 4 pieces between you that is one sixteenth  $\frac{1}{16}$  of the bar each and one eighth  $\frac{1}{8}$  altogether.

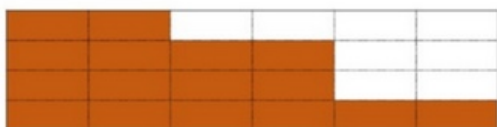
28 pieces are left. That is seven eighths of the bar  $\frac{7}{8}$ .

90 grams for the cake is 16 pieces so there will be 12 pieces left.

This is exactly the number of pieces for 6 people each to have 2 pieces and there will be none left over.

### Diagnostic Assessment This should take about 5–10 minutes.

- Write the question on the board, say to the class:  
**“Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D”.**
- Notice how the learners responded. Ask a learner who gave answer A to explain why he or she gave that answer and DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.
- Then do the same for answers B, C and D. Try to make sure that learners listen to these reasons and try to decide if their own answer was right or wrong.



What simplified fraction does the shaded area represent?

**A**  $\frac{1}{1.5}$

**B**  $\frac{2}{3}$

**C**  $\frac{4}{6}$

**D**  $\frac{16}{24}$

**4. Ask the class again to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.** It is important for learners to explain the reason for their answer otherwise many learners will just make a guess. If the concept is needed for the lesson to follow, explain the right answer or give a remedial task.

**B.** is the correct answer.

#### Common Misconceptions

**A.** Actually equivalent to  $\frac{2}{3}$  but not a simple fraction.

**C.** Correct fraction but not in lowest terms

**D.** Correct fraction but not in lowest terms

<https://diagnosticquestions.com>

### Why do this activity?

This is a good activity for helping learners to develop their concepts of fractions. It's not so much to do with arithmetical manipulation of fractions, but more with exploring and developing ideas.

### Intended learning outcomes

Development of the concept of fractions where one denominator is a multiple of another.

### Generic competences

In doing this activity students will have an opportunity to:

- think flexibly**, be creative and innovative and apply knowledge and skills;
- develop the skill of interpreting and creating visual images to represent concepts and situations;
- interpret problems in a variety of situations.

### Suggestions for Teaching

You can draw the chocolate bar on the board, ask the questions as they appear above and get the learners to give answers and explain their reasons. The last question “Make up your own story...” turns this into an open ended activity and allows the learners to be imaginative and creative.

## Key Questions

- How many pieces were there in the whole bar?
- What fraction is each piece?
- How many pieces make half the chocolate bar?
- How many pieces make one quarter?
- How many pieces make one eighth?
- How many pieces make one sixteenth?
- What fraction is 90 grams of 180 grams?
- What is the mass of half the bar of chocolate?

## Follow up

See the activity Fractions by Halves <https://aiminghigh.aimssec.ac.za/years-5-6-fractions-by-halves/>

Fractions by Thirds <https://aiminghigh.aimssec.ac.za/years-4-7-fractions-by-thirds/>

Twelfths <https://aiminghigh.aimssec.ac.za/years-5-8-twelfths/>

Tangram Fractions <https://aiminghigh.aimssec.ac.za/grades-6-to-10-tangram-fractions/>

**Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA, to Years 4 to 12 in the UK and up to Secondary 5 in East Africa.**

**Note: The mathematics taught in Year 13 (UK) and Secondary 6 (East Africa) is **not** included in the school curriculum for Grade 12 SA.**

	Lower Primary or Foundation Phase Age 5 to 9	Upper Primary Age 9 to 11	Lower Secondary Age 11 to 14	Upper Secondary Age 15+
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6