

Changing Between Fractions, Decimals and Percentages

1) Change the following decimals into percentages:

- a) 0.1 b) 0.93 c) 0.21 d) 0.3 e) 0.07 f) 0.025

2) Change the following percentages into decimals:

- a) 20% b) 17% c) 91% d) 2% e) 9% f) 7.3%

3) Change the following decimals into fractions in their simplest form:

- a) 0.9 b) 0.21 c) 0.4 d) 0.35 e) 0.01 f) 0.025

4) Change the following fractions into decimals:

- a) $\frac{7}{10}$ b) $\frac{29}{100}$ c) $\frac{4}{5}$ d) $\frac{13}{50}$ e) $\frac{7}{20}$ f) $\frac{23}{25}$

5) Change the following percentages into fractions in their simplest form:

- a) 19% b) 70% c) 3% d) 28% e) 85% f) 1.5%

6) Change the following fractions into percentages:

- a) $\frac{9}{10}$ b) $\frac{27}{100}$ c) $\frac{4}{5}$ d) $\frac{27}{50}$ e) $\frac{19}{20}$ f) $\frac{16}{25}$

Answers

1) Change the following decimals into percentages:

- a) 10% b) 93% c) 21% d) 30% e) 7% f) 2.5%

2) Change the following percentages into decimals:

- a) 0.2 b) 0.17 c) 0.91 d) 0.02 e) 0.09 f) 0.073

3) Change the following decimals into fractions in their simplest form:

- a) $\frac{9}{10}$ b) $\frac{21}{100}$ c) $\frac{2}{5}$ d) $\frac{7}{20}$ e) $\frac{1}{100}$ f) $\frac{1}{40}$

4) Change the following fractions into decimals:

- a) 0.7 b) 0.29 c) 0.8 d) 0.26 e) 0.35 f) 0.92

5) Change the following percentages into fractions in their simplest form:

- a) $\frac{19}{100}$ b) $\frac{7}{10}$ c) $\frac{3}{100}$ d) $\frac{7}{25}$ e) $\frac{17}{20}$ f) $\frac{3}{200}$

6) Change the following fractions into percentages:

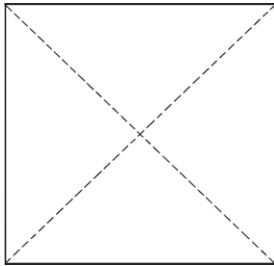
- a) 90% b) 27% c) 80% d) 54% e) 95% f) 64%

Converting Fractions, Decimals and Percentages

Fortune Teller

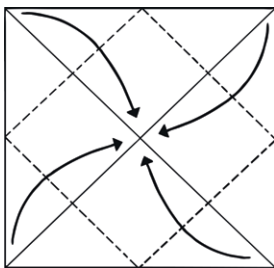
Instructions

①



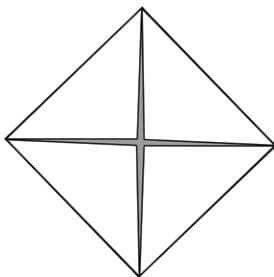
With pictures face down, fold on both diagonal lines. Unfold.

②



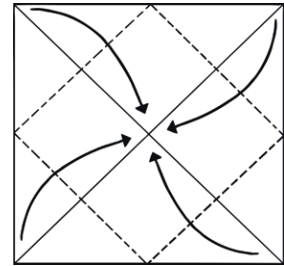
Fold all four corners to the centre.

③



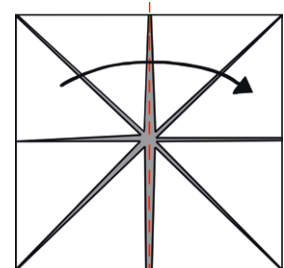
Turn paper over.

④



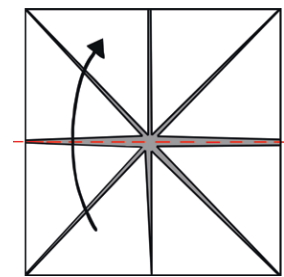
Once again, fold all corners to the centre.

⑤



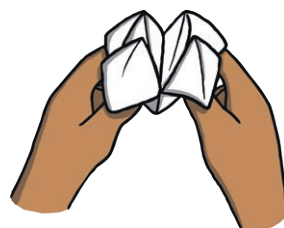
Fold paper in half and unfold.

⑥

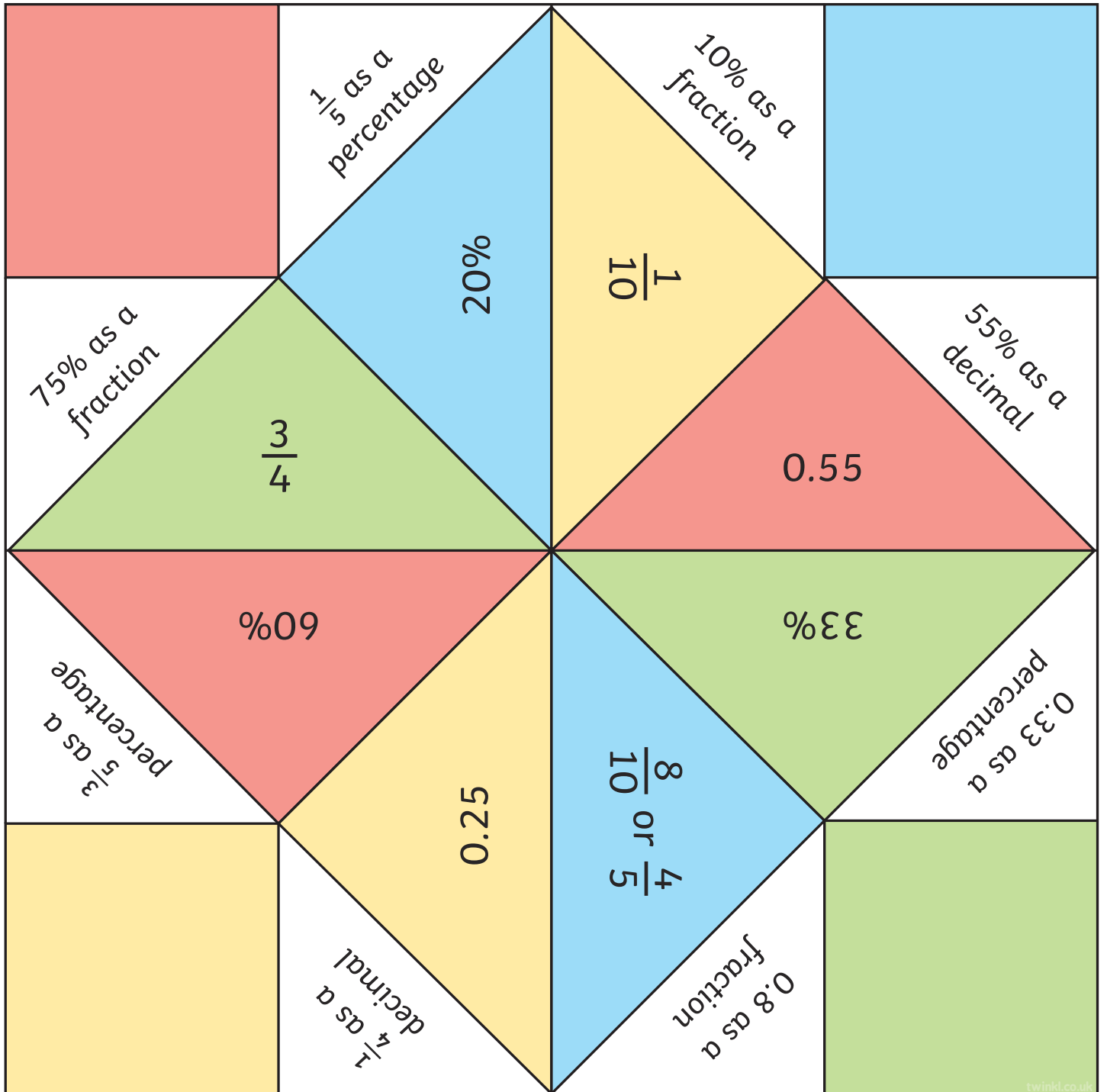


Fold in half from top to bottom. Do not unfold.

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Slide thumbs and forefingers under the squares and move the fortune teller back and forth to play.



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Fractions, Decimals and Percentages

Teaching Ideas

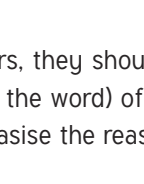
Learning Objective: To understand how to change between fractions, decimals and percentages.

Success Criteria:

- To use place value to change decimals into fractions.
- To use place value to change fractions into decimals.
- To understand that percentage means 'per hundred' and use this to change into fractions and decimals.

Context: This is the fifth lesson in a series on fractions, though can be used as a stand-alone. Students should have an understanding on the meaning and uses of place value and percentages.

Starter

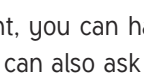
Hand out a  to each student (less able students can use the 100 square one; more able can use the one with no grid). In pairs, they should calculate what fraction (you can interchange this with the word 'proportion' to get them used to the meaning of the word) of the whole square each part is. Demonstrate this by explaining that part A is $\frac{1}{4}$ of the square, which is 25%. Emphasise the reason we know this is because four of them would fit inside the whole shape, or that it's the same as a half of a half.

Students should complete the rest of the table in pairs. Circulate, providing support where necessary. Some students might need reminding that $\frac{1}{8}$ is half of $\frac{1}{4}$, so to find the equivalent percentage, we can halve 25%.

Main Activities

Decimals to Percentages, Percentages to Decimals

Display the examples and ask students to discuss with their partner what they think the equivalent percentages might be. Most students will recognise that 0.3 is 30% but not necessarily know why. Explain that to change from a decimal to a percentage, we multiply by 100 - and therefore divide by 100 when we are going the other way.

At this point, you can hand out the  and they can test their understanding by answering questions 1 and 2. Of course you can also ask students to complete this sheet at the very end. .

Decimals to Fractions, Fractions to Decimals

Once again, ask students to discuss their thoughts in pairs. Students might recognise that 0.7 is $\frac{7}{10}$, since the 7 is in the 10ths column but will usually find 0.15 more tricky. Remember to emphasise the importance in simplifying the fraction each time. Discuss how to use place value and then display the next slide before asking students to consider how the reverse process is different. Students can now complete questions 3 and 4.

Percentages to Fractions, Fractions to Percentages

By considering the meaning of the word 'percent', students should be able to convert a percentage into a fraction. Once they spot that the denominator will be 100, ask them to find a way to change a fraction back into a percentage. They will need to create an equivalent fraction where the denominator is 100. They should now complete questions 5 and 6.

Plenary

To introduce the idea of ordering fractions, decimals and percentages, display the 'Would you rather...' questions and ask students to share their ideas. They might say, "I would have 37% because it's bigger." Encourage them to explain why they think it's bigger, and what they would need to do to prove it.

Alternative: Hand out the _____ sheet and ask students to make them before using them to test their partners.

Fractions, Decimals and Percentages

Learning Objective

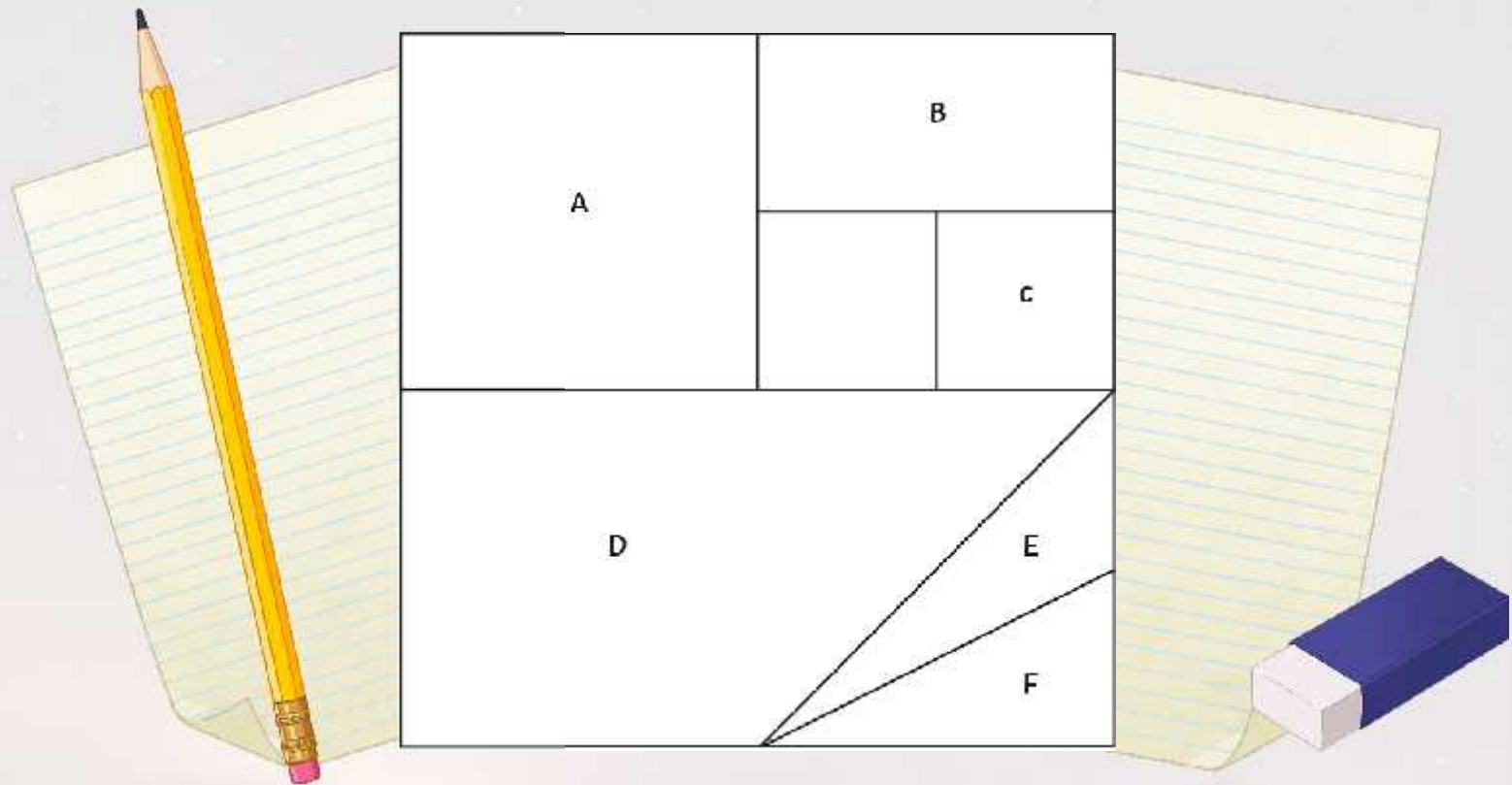
- To understand how to change between fractions, decimals and percentages.

Success Criteria

- To use place value to change decimals into fractions.
- To use place value to change fractions into decimals.
- To understand that percentage means 'per hundred' and use this to change into fractions and decimals.

Starter

The square is a whole. What fraction of the square is represented by each letter? How could you write these as a percentage?



Starter

	Fraction	Percentage
A	$\frac{1}{4}$	25%
B	$\frac{1}{8}$	12.5%
C	$\frac{1}{16}$	6.25%
D	$\frac{3}{8}$	37.5%
E	$\frac{1}{16}$	6.25%
F	$\frac{1}{16}$	6.25%

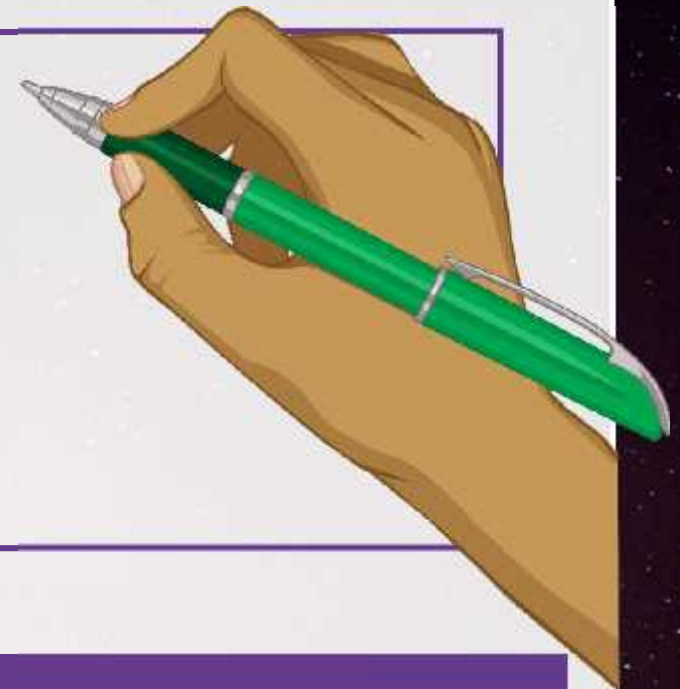
Decimals to Percentages



What methods could we use?
Are there any which are easy to convert?

$$0.3 \\ = \mathbf{30\%}$$

$$0.71 \\ = \mathbf{71\%}$$



Percent means 'per hundred', or 'out of 100', so to change a decimal to a percentage we multiply the number by 100.

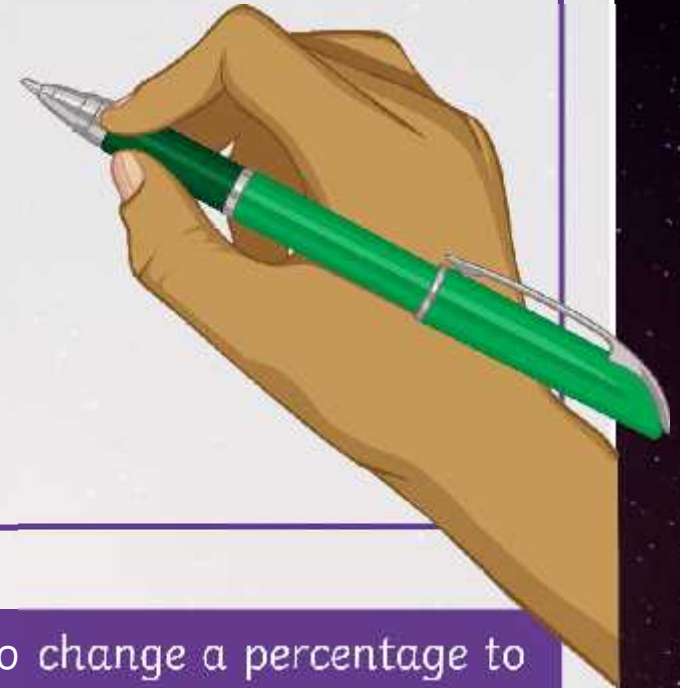
Percentages to Decimals



What methods could we use?
Are there any which are easy to convert?

$$20\% \\ = \mathbf{0.2}$$

$$3\% \\ = \mathbf{0.03}$$



This is the opposite of what we have just done: to change a percentage to a decimal, we divide it by 100.

Extension

Which is bigger: 0.31 or 30.5%?

Decimals to Fractions



What methods could we use?

Are there any which are easy to convert?

$$0.7 = \frac{7}{10} \text{ Because the 7 is in the 10ths column}$$

$$0.15 = \frac{15}{100} = \frac{3}{20} = \text{Because the 5 is in the 100ths column}$$

$$0.125 = \frac{125}{1000} = \frac{1}{8} = \text{Because the 5 is in the 1000ths column}$$



To change a decimal into a fraction, consider the place value. Count the number of decimal places to give you the correct power of 10.

Fractions to Decimals



What methods could we use?

Are there any which are easy to convert?

$$\frac{7}{10} = 0.7$$

$$\frac{13}{100} = 0.13$$

$$\frac{1}{5} = \frac{2}{10} = 0.2$$



To change a fraction to a decimal, we find an **equivalent** fraction with a denominator which is a power of 10 (10, 100, 1000, etc.), then use place value to help us.

Extension

Which is bigger: $\frac{7}{10}$ or 0.29?

Percentages to Fractions



What methods could we use?

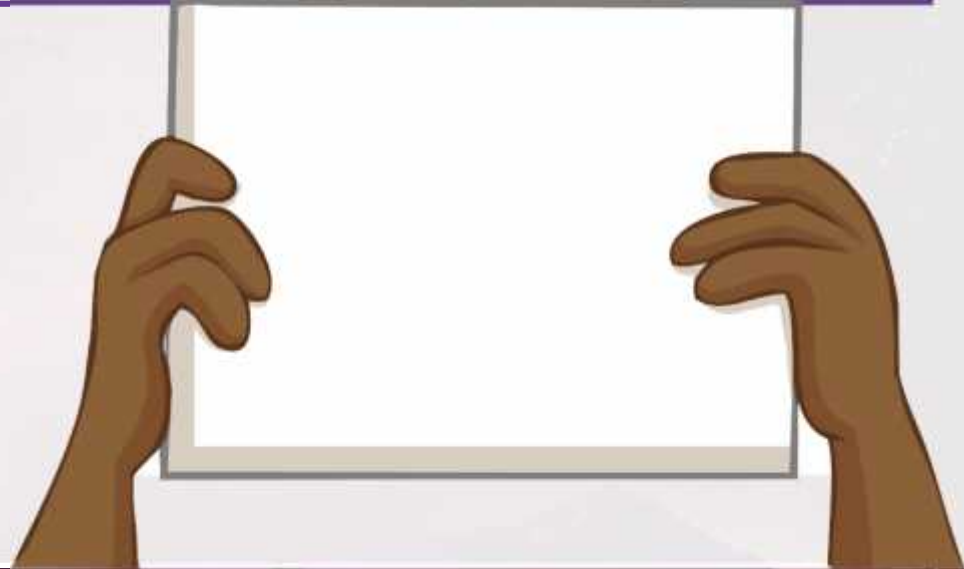
Are there any which are easy to convert?

$$84\% = \frac{84}{100} = \frac{21}{25}$$

$$7\% = \frac{7}{100}$$



To change a percentage to a fraction, we write it over 100 and then simplify the fraction if necessary.



Fractions to Percentages



What methods could we use?

Are there any which are easy to convert?

$$\frac{71}{100} = 71\%$$

$$\frac{9}{10} = \frac{90}{100} = 90\%$$

$$\frac{3}{25} = \frac{12}{100} = 12\%$$



To change a fraction to a percentage, we find an **equivalent fraction** which has a denominator of 100.

Extension

Which is bigger: 18.5% or $\frac{9}{50}$?

Plenary

Would you rather...

Eat 37% of a pizza, or $\frac{2}{5}$ of it?

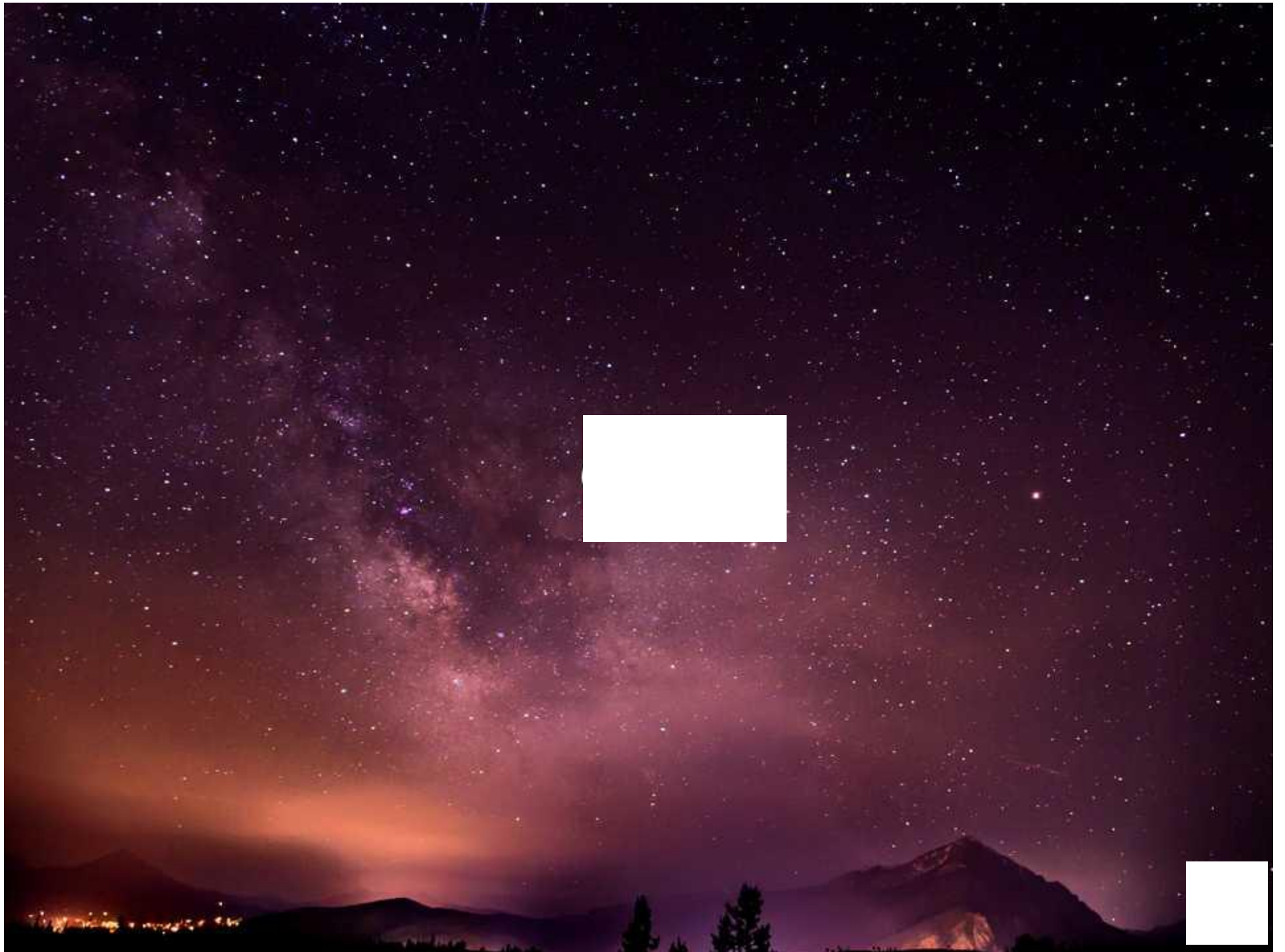
$\frac{2}{5} = \frac{40}{100} = 40\%$, which is larger than 37%.



Have $\frac{11}{25}$ of an inheritance, or 0.45?

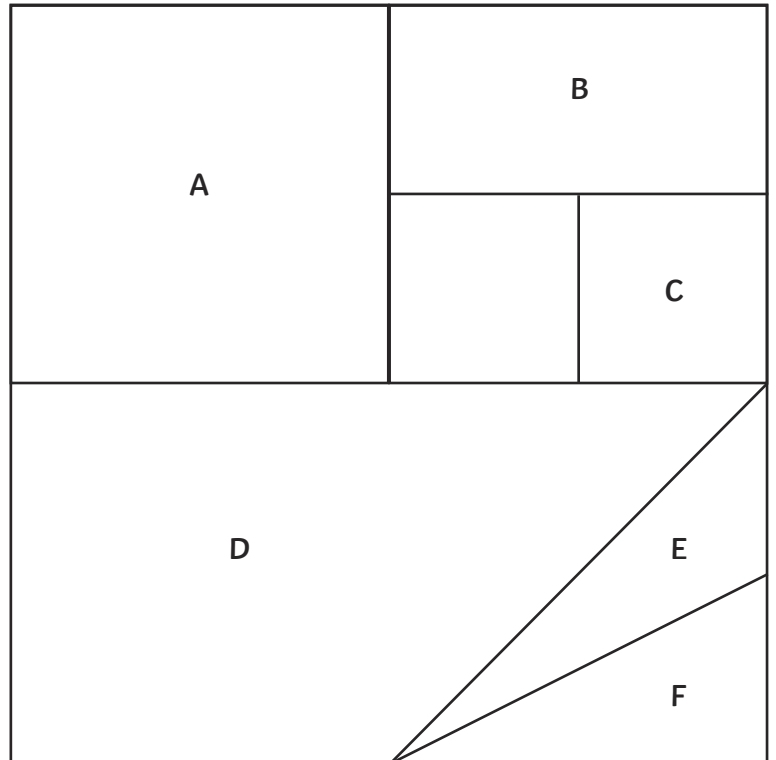
$\frac{11}{25} = \frac{44}{100} = 0.44$, which is smaller than 0.45.





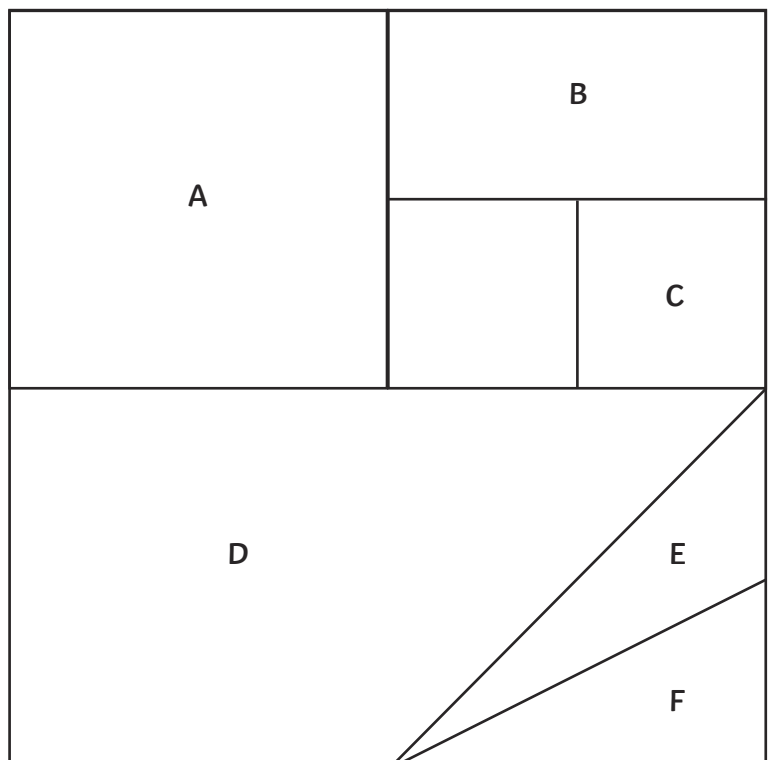
Starter

	Fraction	Percentage
A		
B		
C		
D		
E		
F		



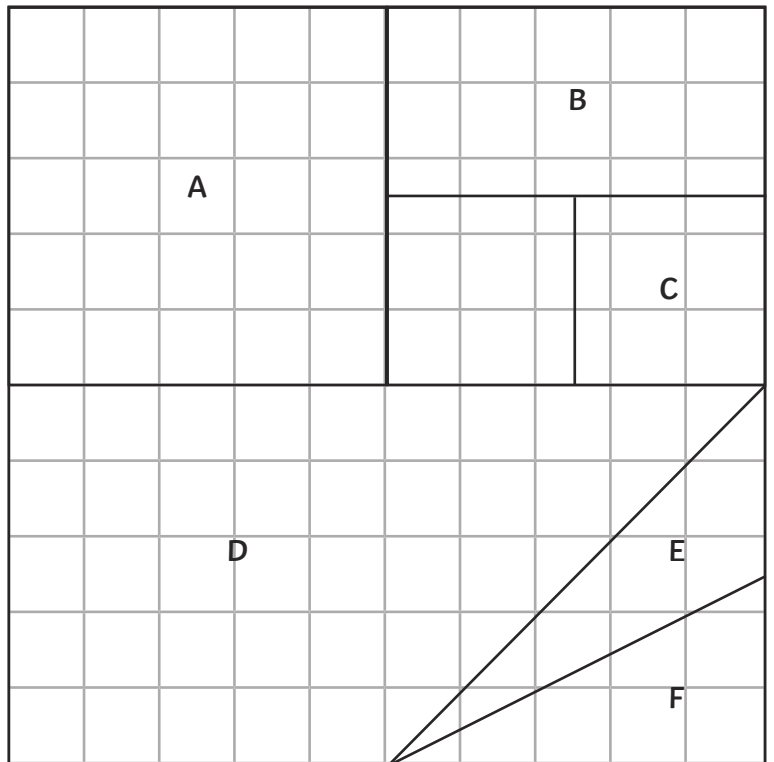
Starter

	Fraction	Percentage
A		
B		
C		
D		
E		
F		



Starter

	Fraction	Percentage
A		
B		
C		
D		
E		
F		



Starter

	Fraction	Percentage
A		
B		
C		
D		
E		
F		

