Fractions: Calculate Unit Fractions of a Quantity

Aim:	**Success Criteria:**	**Resources:**
Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. To calculate unit fractions of a quantity.	I can use bar models to calculate a unit fraction of a whole number. I can use base ten to calculate a unit fraction of a larger amount. I can find a unit fraction of an amount by dividing the amount by the denominator, sharing into equal groups.	Lesson Pack Counters – per pair Base ten – per pair
	Key/New Words: Numerator, denominator, equivalent, proper fraction, whole, part, multiple.	**Preparation:** Fish Tank Fractions Activity Sheets – one per pair/group as required Fraction Bars Support Resource – one per child/pair as required Diving into Mastery Activity Sheets – as required

Prior Learning: It will be helpful if the children are confident with recalling multiplication and division facts up to 12 × 12.

Learning Sequence

	Remember It: Use the corresponding slide on the Lesson Presentation to rehearse identifying missing multiples in the three, four, seven and nine times tables.	
	Fractions at a Pet Shop: Use the corresponding slides on the Lesson Presentation to rehearse finding a unit fraction of an amount by dividing the total by the denominator represented using bar models, and emphasise the link to division by sharing objects into equal groups. Can the children find a unit fraction of a set of objects?	
	How Many? Working in partners, the children use bar models and known multiplication and division facts to find one-half of 16 and one-fifth of 20. Can the children use bar models to calculate a unit fraction of a whole number?	
	Larger Quantities: Use the corresponding slides on the Lesson Presentation to move onto finding both unit fractions of larger quantities by using base ten equipment to support with dividing.	
	How Many? Working in partners, the children use bar models and place value facts to find one half of 46 and one fifth of 75. Can the children use bar models and base ten equipment to calculate a unit fraction of a larger amount?	
	Fish Tank Fractions: The children work independently or with a partner to complete the Fish Tank Fractions Activity Sheets. Can the children find a unit fraction of an amount by dividing the amount by the denominator, sharing into equal groups? Children identify different unit fractions of 12. They can use the Fraction Bars Sheet to support with counters. Children identify different unit fractions of 36. They can use the Fraction Bars Sheet to support with base 10 equipment. Children identify different unit fractions of 60. They can use the Fraction Bars Sheet to support with base 10 equipment.	

	Diving into Mastery: Schools using a mastery approach may prefer to use the following as an alternative activity. These sheets might not necessarily be used in a linear way. Some children might begin at the 'Deeper' section and others may 'dive straight in' to the 'Deepest' section if they have already mastered the skill and are applying this to show their depth of understanding. Children complete fluency questions involving calculating unit fractions of amounts. Children answer reasoning questions involving calculating unit fractions of amounts, explaining their reasoning. Children work individually or collaboratively on problem-solving investigations involving calculating unit fractions of amounts.	
	Walkies! Working in partners, the children explore finding all the unit fractions of 72.	

ExploreIt	
Investigateit:	Children identify the unit fractions they can calculate using different groups, e.g. unit fractions of the year group, their maths group, the school.
Learnit:	Children will find this visually exciting Knowledge Organiser a useful tool to support their understanding of fractions.

1) Children should have circled 2 rabbits.

2)

a) $\frac{1}{3}$ of 9 = **3**

9		
3	**3**	**3**

b) $\frac{1}{4}$ of 12 = **3**

12			
3	**3**	**3**	**3**

c) $\frac{1}{5}$ of 20 = **4**

20				
4	**4**	**4**	**4**	**4**

3) $\frac{1}{6}$ **of 90 = 15**

90					
15	**15**	**15**	**15**	**15**	**15**

4) There are 16 hamsters altogether.

1) a) True. $\frac{1}{3}$ **of 45 = 15 and** $\frac{1}{4}$ **of 48 is 12.**

b) False. $\frac{1}{5}$ **of 85 = 17 and** $\frac{1}{6}$ **of 78 is 13.**

2) Eva is correct. 28 ÷ 4 = 7, so the 4 rabbits could represent $\frac{1}{7}$ **of 28.**
Cassie is incorrect. 22 isn't a multiple of 4.
Demi is correct. 40 ÷ 4 = 10, so the 4 rabbits could represent $\frac{1}{10}$ **of 40.**

1) a) $\frac{1}{8}$ **of 24 = 3 red fish**

b) $\frac{1}{4}$ **of 24 = 6 yellow fish**

c) $\frac{1}{3}$ **of 24 = 8 silver fish**

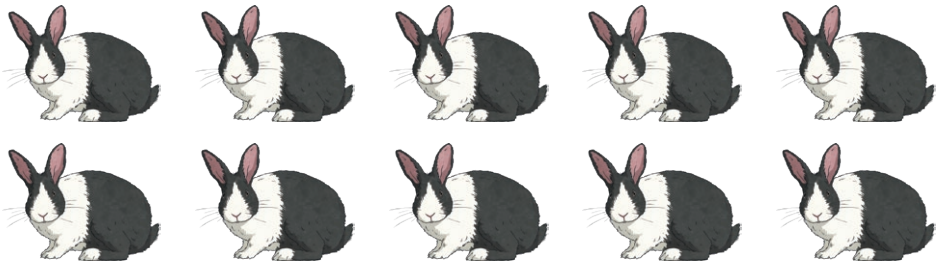
d) $\frac{1}{6}$ **of 24 = 4 purple fish**

e) All the other fish add up to 21, so there are 3 fish left over. There are 3 green fish.

f) 3 is $\frac{1}{8}$ **of 24.**

2) a) $\frac{1}{3}$ **of 270 = 90**

1) Circle one-fifth of the rabbits.



2) Use the bar models to find the fractions of each quantity.

a) $\frac{1}{3}$ of 9 = ___

9		

b) $\frac{1}{4}$ of 12 = ___

12			

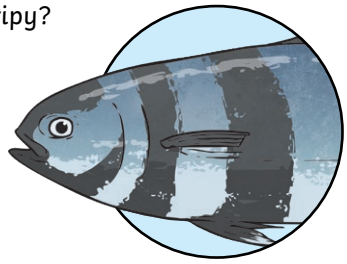
c) $\frac{1}{5}$ of 20 = ___

20				

3) There are 90 fish in the fish tank. $\frac{1}{6}$ of the fish are stripy. How many fish are stripy? Use the bar model to help show your working.

90					

_____ of the fish are stripy.



4) This is one-quarter of the hamsters in a cage.

How many hamsters are in the cage altogether?

_____

1) True or false? Convince me by showing your calculations.

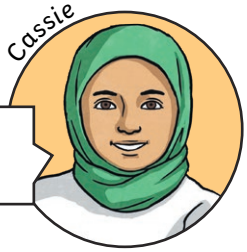
a) $\frac{1}{3}$ of 45 is greater than $\frac{1}{4}$ of 48.

b) $\frac{1}{5}$ of 85 is less than $\frac{1}{6}$ of 78.

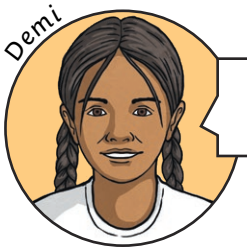
2) 4 rabbits are outside the hutch. The rest are in the hutch sleeping.
The 4 rabbits represent a unit fraction of the total number of rabbits.

Cassie, Demi and Eva are discussing how many rabbits there could be in total. Who is right? Who is wrong? Explain your reasoning.

I think there could be 28 rabbits in total.

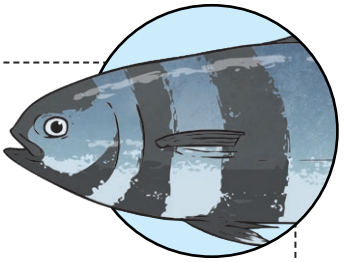


I think there could be 22 rabbits in total.



I think there could be 40 rabbits in total.

1) There are 24 fish in the tank.
Use the clues to find out how many fish of each colour there are.



a) $\frac{1}{8}$ of the fish are red = _____

b) $\frac{1}{4}$ of the fish are yellow = _____

c) $\frac{1}{3}$ of the fish are silver = _____

d) $\frac{1}{6}$ of the fish are purple = _____

e) The remaining fish are green. How many fish are green? _____

f) What fraction of the 24 fish are green? _____

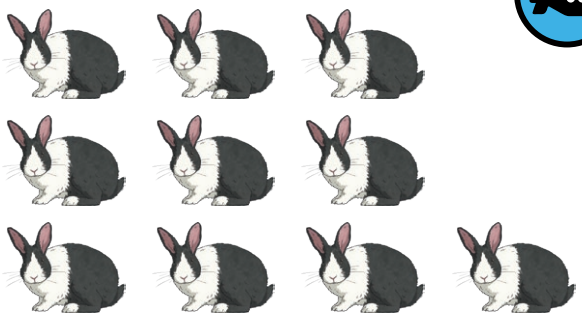
2) **a)** Use all the digit cards once to complete this calculation.

0	1	3	7	9

$\square$ of 2$\square$0 = $\square\square$

b) Can you create a similar question for your partner to solve?

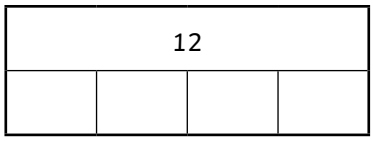
1) Circle one-fifth of the rabbits.



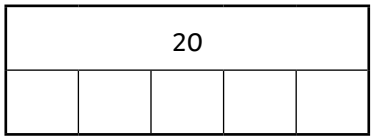
2) Use the bar models to find the fractions of each quantity.

a) $\frac{1}{3}$ of 9 = ___

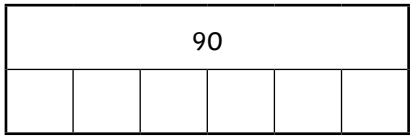
b) $\frac{1}{4}$ of 12 = ___



c) $\frac{1}{5}$ of 20 = ___

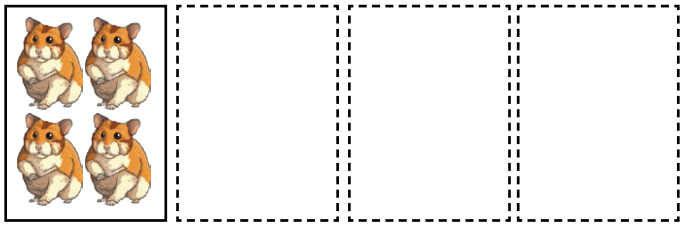


3) There are 90 fish in the fish tank. $\frac{1}{6}$ of the fish are stripy. How many fish are stripy? Use the bar model to help show your working.



_____ of the fish are stripy.

4) This is one-quarter of the hamsters in a cage.



How many hamsters are in the cage altogether?

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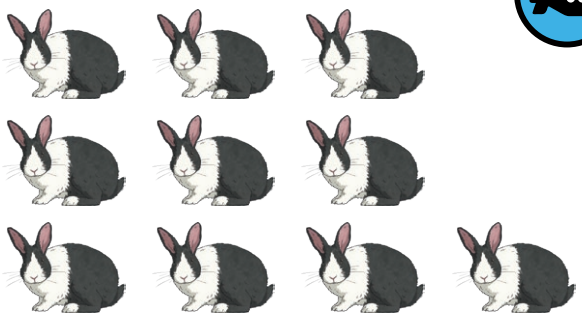
1) Circle one-fifth of the rabbits.



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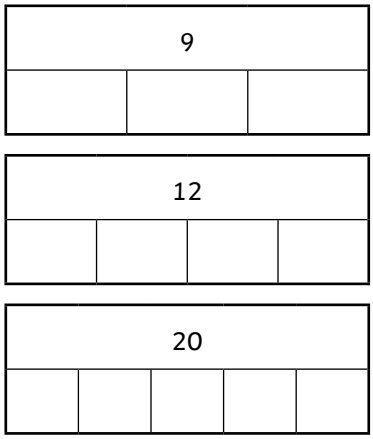

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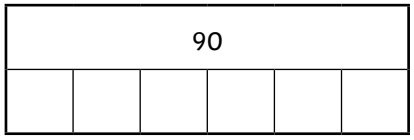

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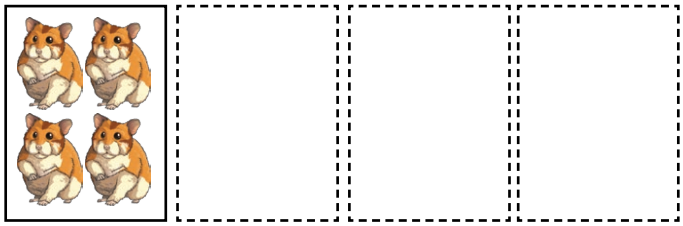

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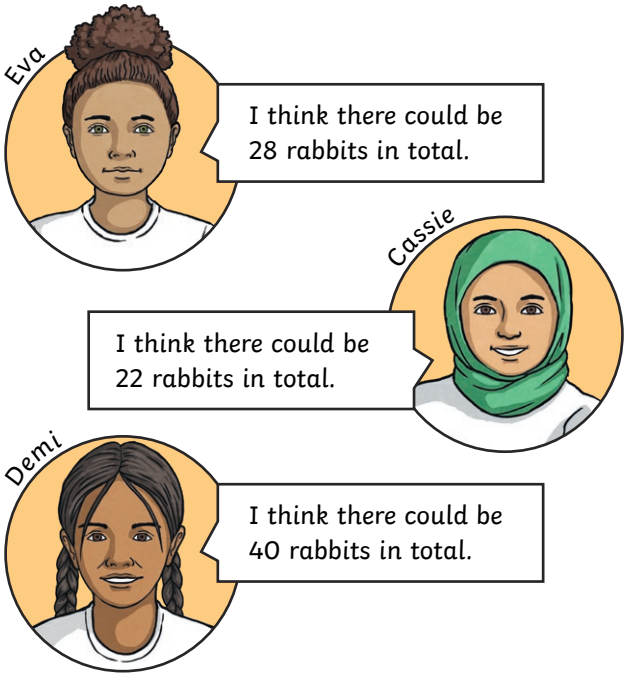

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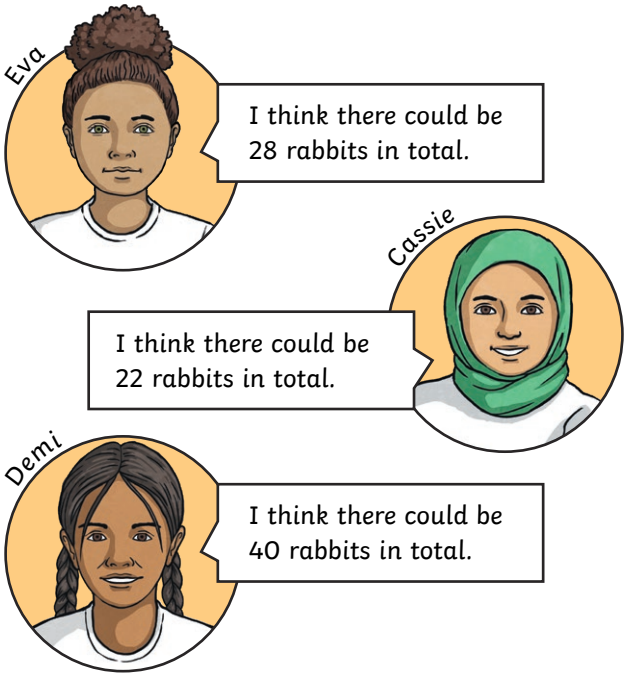

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1) There are 24 fish in the tank.
Use the clues to find out how many fish of each colour there are.

a) $\frac{1}{8}$ of the fish are red = _____

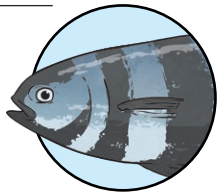
b) $\frac{1}{4}$ of the fish are yellow = _____

c) $\frac{1}{3}$ of the fish are silver = _____

d) $\frac{1}{6}$ of the fish are purple = _____

e) The remaining fish are green.
How many fish are green? _____

f) What fraction of the 24 fish are green? _____



2) **a)** Use all the digit cards once to complete this calculation.

0	1	3	7	9

$\frac{\square}{\square}$ of 2$\square$0 = $\square\square$

b) Can you create a similar question for your partner to solve?

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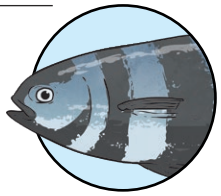

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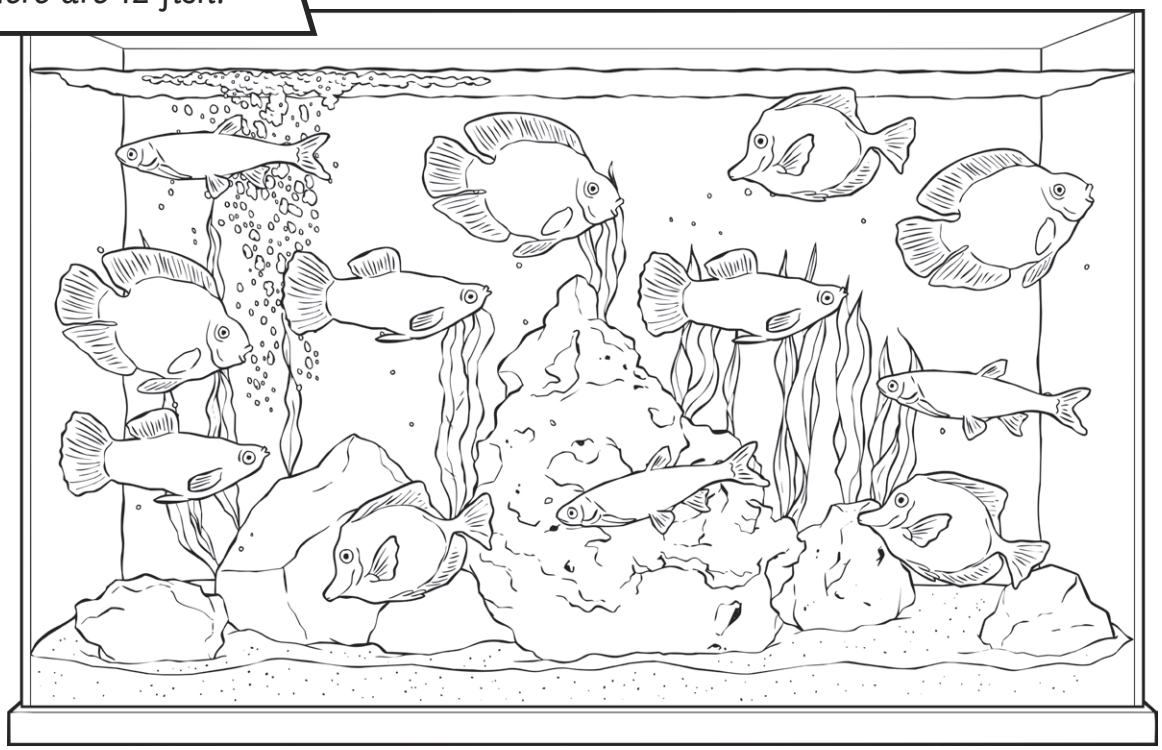
Fish Tank Fractions

To calculate unit fractions of a quantity.

Here are 12 fish.



Use the bar models to find the different unit fractions of 12.

$\frac{1}{2}$ of 12 = _____

12	

$\frac{1}{3}$ of 12 = _____

12		

$\frac{1}{4}$ of 12 = _____

12			

$\frac{1}{6}$ of 12 = _____

12					

Fish Tank Fractions **Answers**

$\frac{1}{2}$ of 12 = **6**

12	
6	**6**

$\frac{1}{3}$ of 12 = **4**

12		
4	**4**	**4**

$\frac{1}{4}$ of 12 = **3**

12			
3	**3**	**3**	**3**

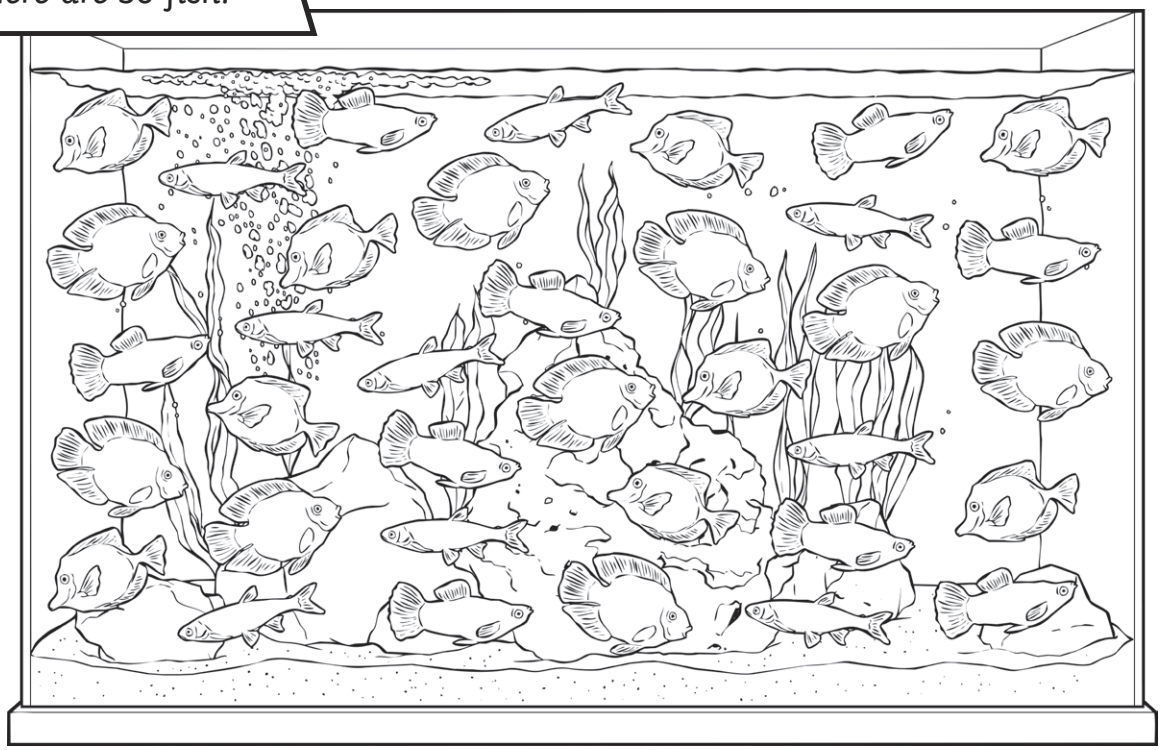
$\frac{1}{6}$ of 12 = **2**

12					
2	**2**	**2**	**2**	**2**	**2**

Fish Tank Fractions

To calculate unit fractions of a quantity.

Here are 36 fish.



Use the bar models to find the different unit fractions of 36.

$\frac{1}{2}$ of 36 = _____

36	

$\frac{1}{3}$ of 36 = _____

36		

$\frac{1}{4}$ of 36 = _____

36			

$\frac{1}{6}$ of 36 = _____

36					

Fish Tank Fractions **Answers**

$\frac{1}{2}$ of 36 = **18**

36	
18	**18**

$\frac{1}{3}$ of 36 = **12**

36		
12	**12**	**12**

$\frac{1}{4}$ of 36 = **9**

36			
9	**9**	**9**	**9**

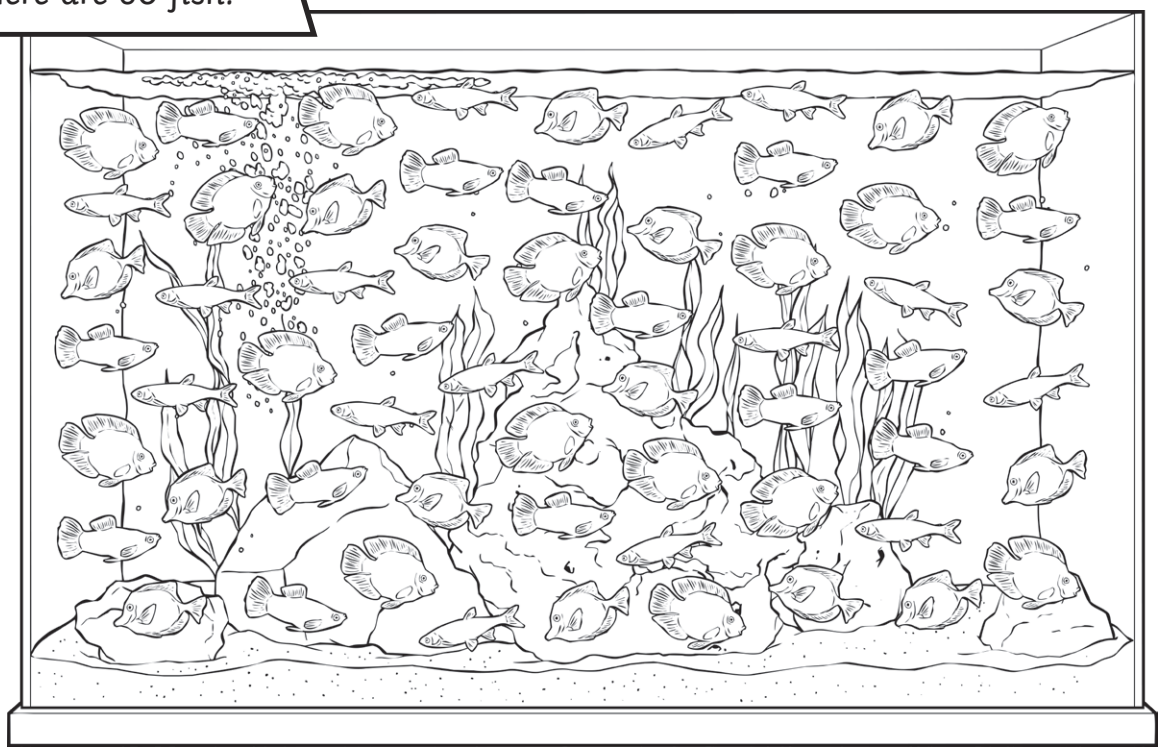
$\frac{1}{6}$ of 36 = **6**

36					
6	**6**	**6**	**6**	**6**	**6**

Fish Tank Fractions

To calculate unit fractions of a quantity.

Here are 60 fish.



Use the bar models to find the different unit fractions of 60.

$\frac{1}{4}$ of 60 = _____

60			

$\frac{1}{5}$ of 60 = _____

60				

$\frac{1}{10}$ of 60 = _____

60									

$\frac{1}{12}$ of 60 = _____

60											

Fish Tank Fractions **Answers**

$\frac{1}{4}$ of 60 = **15**

60			
15	**15**	**15**	**15**

$\frac{1}{5}$ of 60 = **12**

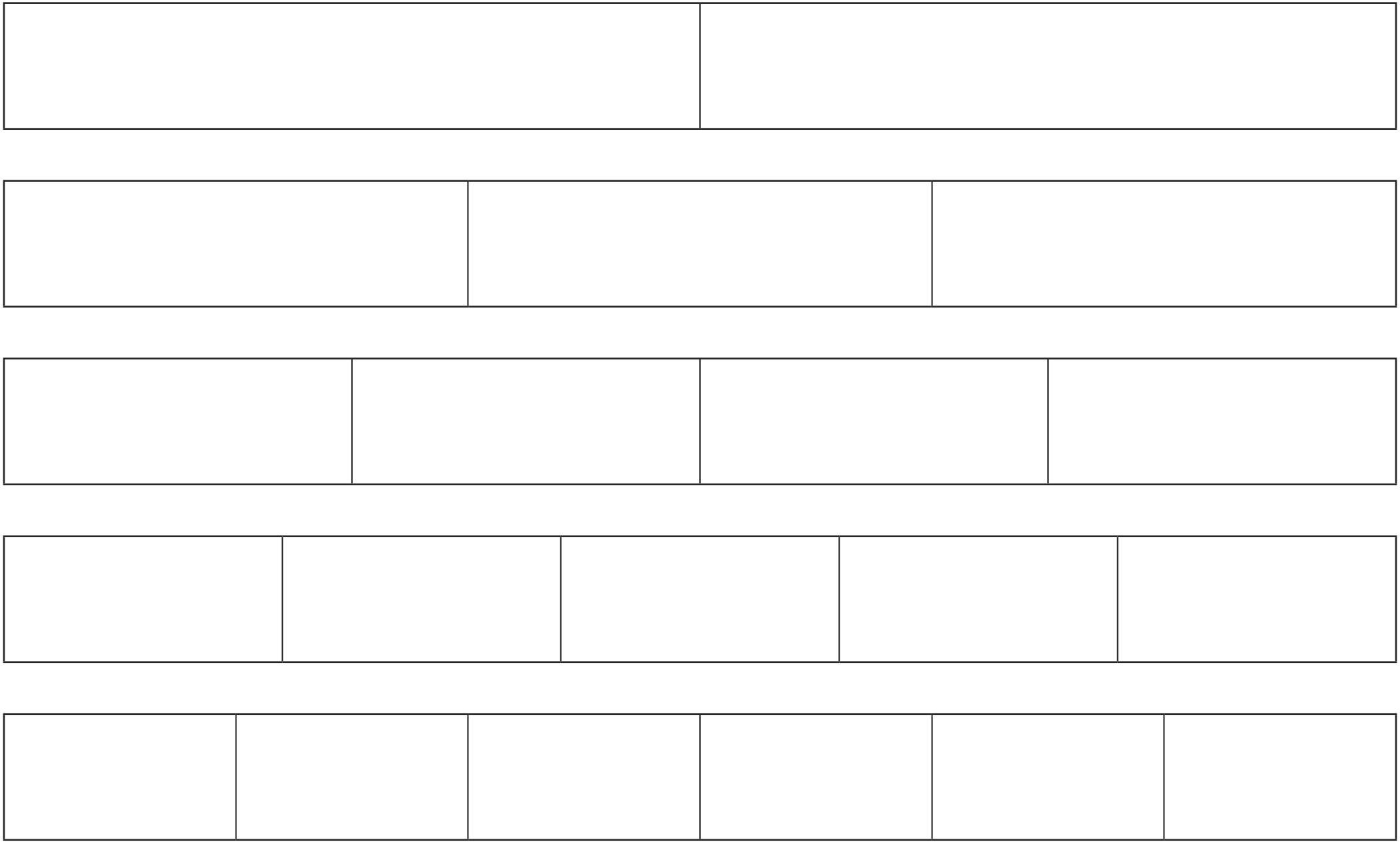
60				
12	**12**	**12**	**12**	**12**

$\frac{1}{10}$ of 60 = **6**

60									
6	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**	**6**

$\frac{1}{12}$ of 60 = **5**

60											
5	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**



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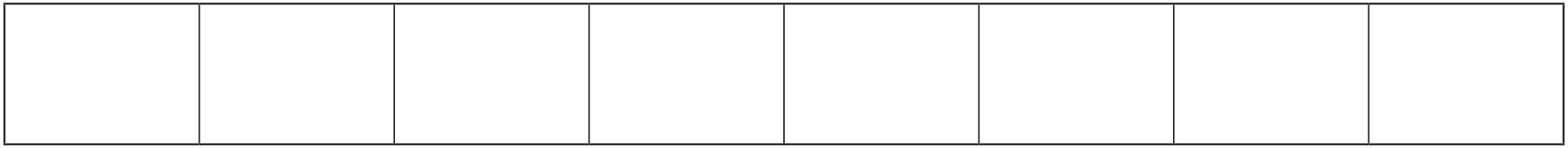

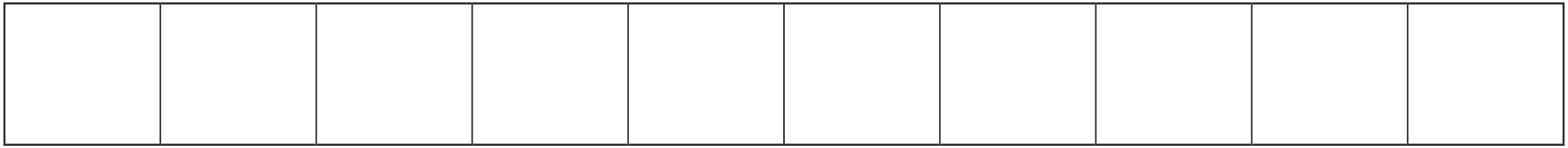

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