

Year 6 Maths

23.02.2021

LO: To understand how to
solve problems involving
ratio

Starter



Work out the answer to each fraction problem, then cross it off the target board. Add together the remaining numbers to find the target number.

$$\frac{1}{2} \text{ of } 24 =$$

$$\frac{8}{9} \text{ of } 81 =$$

$$\frac{1}{4} \text{ of } 32 =$$

$$\frac{3}{4} \text{ of } 40 =$$

$$\frac{1}{5} \text{ of } 15 =$$

$$\frac{5}{6} \text{ of } 66 =$$

$$\frac{2}{5} \text{ of } 15 =$$

$$\frac{5}{8} \text{ of } 56 =$$

$$\frac{3}{4} \text{ of } 48 =$$

$$\frac{2}{7} \text{ of } 63 =$$

$$\frac{3}{7} \text{ of } 21 =$$

$$\frac{7}{11} \text{ of } 121 =$$



Answers



Work out the answer to each fraction problem, then cross it off the target board. Add together the remaining numbers to find the target number.

$$\frac{1}{2} \text{ of } 24 = 12$$

$$\frac{8}{9} \text{ of } 81 = 72$$

$$\frac{1}{4} \text{ of } 32 = 8$$

$$\frac{3}{4} \text{ of } 40 = 30$$

$$\frac{1}{5} \text{ of } 15 = 3$$

$$\frac{5}{6} \text{ of } 66 = 55$$

$$\frac{2}{5} \text{ of } 15 = 6$$

$$\frac{5}{8} \text{ of } 56 = 35$$

$$\frac{3}{4} \text{ of } 48 = 36$$

$$\frac{2}{7} \text{ of } 63 = 18$$

$$\frac{3}{7} \text{ of } 21 = 9$$

$$\frac{7}{11} \text{ of } 121 = 77$$

Answers



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$$\frac{7}{11} \text{ of } 121 = 77$$

9	31	25	3
8	77	36	72
52	30	12	7
55	6	25	18

Target Number:
 $31 + 52 + 25 + 7 =$

Answers



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$$\frac{1}{2} \text{ of } 24 = 12$$

$$\frac{8}{9} \text{ of } 81 = 72$$

$$\frac{1}{4} \text{ of } 32 = 8$$

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9	31	25	3
8	77	36	72
52	30	12	7
55	6	25	18

Target Number:

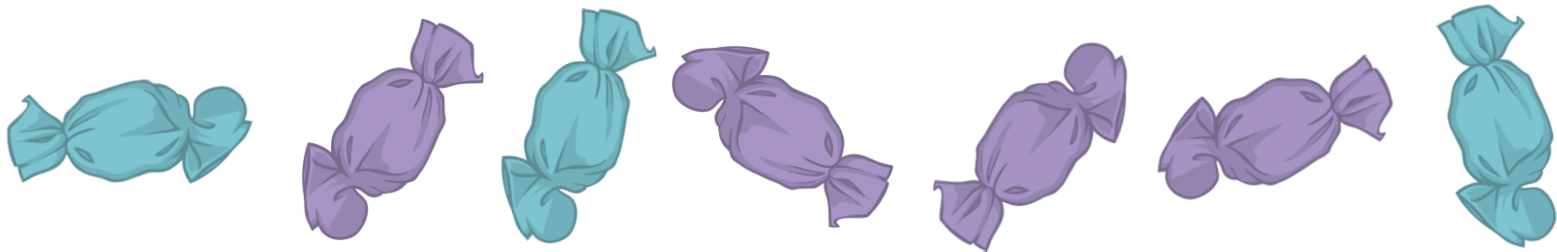
$$31 + 52 + 25 + 7 = 115$$

Ratio



A ratio is a way of comparing amounts of something. We use a colon to represent the word “to”.

For example, the ratio of blue ‘to’ purple sweets below is 3:4.



Why isn't the ratio 4:3?

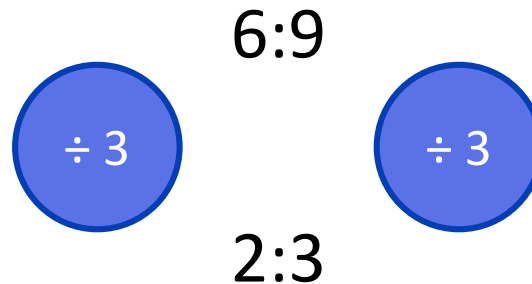
As blue sweets were mentioned first, we take them to be the first number in the ratio. We could say, therefore, that the ratio of purple to blue sweets is 4:3.

Ratio



We can treat ratios in the same way we do fractions: by dividing by the highest common factor, we can simplify them.

For example:



Ratio



Write down the ratios, leaving your answers in their simplest form:

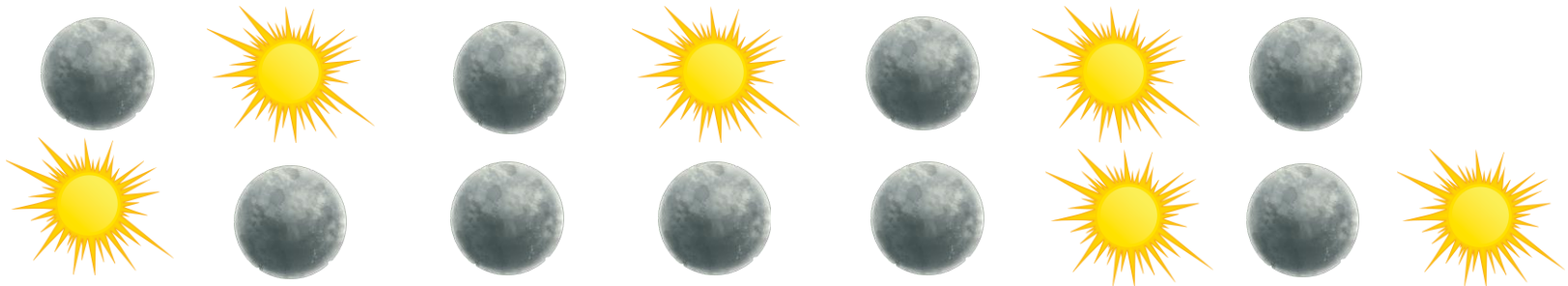
1. Blonde-haired children to dark-haired children.



2. Pink sweets to yellow sweets.



3. Suns to moons



Ratio



Write down the ratios, leaving your answers in their simplest form:

4. Orange juices to cups of tea.



5. Dogs to cats to rabbits.



Answers

Write down the ratios, leaving your answers in their simplest form:

1. Blonde-haired children to dark-haired children.

$$4:8 = 1:2$$

2. Pink sweets to orange sweets.

$$8:6 = 4:3$$

3. Suns to moons.

$$6:9 = 2:3$$

4. Orange juices to cups of tea.

$$12:8 = 3:2$$

5. Dogs to cats to rabbits.

$$8:2:10 = 4:1:5$$

Think, Pair, Share



Share £60 in the ratio 2:3.

How many parts are we sharing this into?

$$2 + 3 = 5$$

The first person is going to get 2 of these 5 parts, or $\frac{2}{5}$ of the total amount.

$$\frac{2}{5} \text{ of } £60 = 24$$

The second person is going to get 3 of these 5 parts, or $\frac{3}{5}$ of the total amount.

$$\frac{3}{5} \text{ of } £60 = £36$$

Therefore, the money is shared £24:£36.

How could we check this answer?

Add together the answers and make sure they equal the original amount.

$$24 + 36 = 60$$



Think, Pair, Share



Share £80 in the ratio 3:4:1.

How many parts are we sharing this into?

$$3 + 4 + 1 = 8$$

The first person is going to get 3 of these 8 parts, or $\frac{3}{8}$ of the total amount.

$$\frac{3}{8} \text{ of } £80 = £30$$

The second person is going to get $\frac{4}{8}$ or $\frac{1}{2}$ of the total amount.

$$\frac{1}{2} \text{ of } £80 = £40$$

The third person is going to get $\frac{1}{8}$ of the total amount.

$$\frac{1}{8} \text{ of } £80 = £10$$

Therefore, the money is shared £30:£40:£10.

$$\text{Check: } 30 + 40 + 10 = 80$$



Your Turn -Simple Ratios of Quantities



1. Share 50 in the ratio 2:3.
2. Share 800 in the ratio 9:7.
3. Share 40 in the ratio 1:3:6.
4. Share £770 in the ratio 4:7.
5. Share 1kg in the ratio 4:6.
6. Share 6m in the ratio 7:3:5.
7. Jolene makes a pattern out of beads. She uses only red and silver beads in the ratio 5:1. How many red beads will she need for a pattern with 30 beads in it?
8. Caron has a bag of 44 marbles. She shares them with Kelsie in the ratio 1:3. Caron keeps the larger share for herself. How many marbles does she give to Kelsie?
9. James makes pastry. He uses flour to butter in the ratio 2:1. The total mass of his pastry is 600g. What quantities of flour and butter did he use?
10. Zack and Kenny are waiters in a restaurant. The total amount of tips they receive at the end of the week is £126.90. Zack worked 5 nights and Kenny worked 4 nights. They decide to split the tips by the ratio of the nights they worked. How much do they get each?

Your Turn -Simple Ratios of Quantities Answers



1. Share 50 in the ratio 2:3.

$$2 + 3 = 5$$

$$50 \div 5 = 10$$

$$20:30$$

2. Share 800 in the ratio 9:7.

$$9 + 7 = 16$$

$$800 \div 16 = 50$$

$$450:350$$

3. Share 40 in the ratio 1:3:6.

$$1 + 3 + 6 = 10$$

$$40 \div 10 = 4$$

$$4:12:24$$

4. Share £770 in the ratio 4:7.

$$4 + 7 = 11$$

$$770 \div 11 = 70$$

$$280:490$$

5. Share 1kg in the ratio 4:6.

$$4 + 6 = 10$$

$$1 \div 10 = 0.1\text{kg or }100\text{g}$$

$$0.4\text{kg}:0.6\text{kg or }400\text{g}:600\text{g}$$

6. Share 6m in the ratio 7:3:5.

$$7 + 3 + 5 = 15$$

$$6 \div 15 = 0.4\text{m or }40\text{cm}$$

$$2.8\text{m}:1.2\text{m}:2\text{m or }280\text{cm}:120\text{cm}:200\text{cm}$$

7. Jolene makes a pattern out of beads. She uses only red and silver beads in the ratio 5:1. How many red beads will she need for a pattern with 30 beads in it?

$$5 + 1 = 6$$

$$30 \div 6 = 5 \text{ beads}$$

$$5 \times 5 = 25 \text{ red beads}$$

8. Caron has a bag of 44 marbles. She shares them with Kelsie in the ratio 1:3. Caron keeps the larger share for herself. How many marbles does she give to Kelsie?

$$1 + 3 = 4$$

$$44 \div 4 = 11 \text{ marbles}$$

$$\text{Caron gives Kelsie 11 marbles.}$$

Your Turn -Simple Ratios of Quantities Answers



9. James makes pastry. He uses flour to butter in the ratio 2:1. The total mass of his pastry is 600g. What quantities of flour and butter did he use?

$$2 + 1 = 3$$

$$600 \div 3 = 200\text{g}$$

$$\text{Flour} = 2 \times 200 = 400\text{g}$$

$$\text{Butter} = 1 \times 200 = 200\text{g}$$

10. Zack and Kenny are waiters in a restaurant. The total amount of tips they receive at the end of the week is £126.90. Zack worked 5 nights and Kenny worked 4 nights. They decide to split the tips by the ratio of the nights they worked. How much do they get each?

$$5 + 4 = 9$$

$$£126.90 \div 9 = £14.10$$

$$\text{Zack} = 5 \times £14.10 = £70.50$$

$$\text{Kenny} = 4 \times £14.10 = £56.40$$

Your Turn



Complete the joke activity. If you are very confident, start at “Start 1”; if you are still a bit unsure, try “Start 2”.

Dividing in a Given Ratio

Begin on 'Start 1' or 'Start 2'. The question at the bottom of each card will lead you to an answer on top of another. Collect the words as you answer each question to spell out two jokes.

£10 Ben and Caleb share some money in the ratio 4:9. If Ben gets £16, how much does Caleb get?	Start 1 45 in the ratio 2:7	£15 Ben and Caleb share some money in the ratio 5:9. If Caleb gets £18, how much does Ben get?	54:9:18 22 in the ratio 3:2	11:22:33 35 in the ratio 2:1:4	Start 2 20 in the ratio 1:3
his	how	by	vampire	if	what
10:5:20 81 in the ratio 6:1:2	10:20 20 in the ratio 2:3	5:15 30 in the ratio 1:2	£12 end	8:16:12 end	27:18 66 in the ratio 1:2:3
a	skeletons	do	coffin	appetit	tell
18:12 24 in the ratio 1:2:3	17.6:4.4 Ben and Caleb share some money in the ratio 3:5. If Ben gets £9, how much does Caleb get?	4:8:12 16 in the ratio 3:4:1	10:35 66 in the ratio 3:8	6:8:2 36 in the ratio 2:4:3	£36 Ben and Caleb share some money in the ratio 2:7. If Caleb gets £30 more than Ben, how much does Ben get?
before	cold?	eating?	can	bone	loud
18:48 45 in the ratio 3:2	8:12 30 in the ratio 3:2	4.25:12.75 22 in the ratio 4:1	13.2:8.8 17 in the ratio 1:3		
you	say	a	has		

Secondary

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Your Turn



Extension:

Alice, Bilal and Cho are sharing some money. Alice receives $\frac{2}{7}$ of the money, and Bilal and Cho share the remainder in the ratio 3:8. What proportion of the money does Bilal get?

Start 1 Answers



how

45 in the ratio 2:7

$$45 \div (2 + 7) = 5$$

10:35

can

66 in the ratio 3:8

$$66 \div (3 + 8) = 6$$

18:48

you

45 in the ratio 3:2

$$45 \div (3 + 2) = 9$$

27:18

tell

66 in the ratio 1:2:3

$$66 \div (1 + 2 + 3) = 11$$

11:22:33

if

35 in the ratio 2:1:4

$$35 \div (2 + 1 + 4) = 5$$

10:5:20

a

81 in the ratio 6:1:2

$$81 \div (6 + 1 + 2) = 9$$

54:9:18

vampire

22 in the ratio 3:2

$$22 \div (3 + 2) = 4.4$$

13.2:8.8

has

17 in the ratio 1:3

$$17 \div (1 + 3) = 4.25$$

4.25:12.75

a

22 in the ratio 4:1

$$22 \div (4 + 1) = 4.4$$

17.6:4.4

cold?

Ben and Caleb share some money in the ratio 3:5. If Ben gets £9, how much does Caleb get?

$$9 \div 3 = 3$$

$$3 \times 5 = £15$$

by

Ben and Caleb share some money in the ratio 5:9. If Caleb gets £18, how much does Ben get?

$$18 \div 9 = 2$$

$$5 \times 2 = £10$$

his

Ben and Caleb share some money in the ratio 4:9. If Ben gets £16, how much does Caleb get?

$$16 \div 4 = 4$$

$$9 \times 4 = £36$$

loud

Ben and Caleb share some money in the ratio 2:7. If Caleb gets £30 more than Ben, how much does Ben get?

$$30 \div (7 - 2) = 6$$

$$2 \times 6 = £12$$

coffin

Start 2 Answers



what

20 in the ratio 1:3

$$20 \div (1 + 3) = 5$$

5:15

do

30 in the ratio 1:2

$$30 \div (1 + 2) = 10$$

10:20

skeletons

20 in the ratio 2:3

$$20 \div (2 + 3) = 4$$

8:12

say

30 in the ratio 3:2

$$30 \div (3 + 2) = 6$$

18:12

before

24 in the ratio 1:2:3

$$24 \div (1 + 2 + 3) = 4$$

4:8:12

eating?

16 in the ratio 3:4:1

$$16 \div (3 + 4 + 1) = 2$$

6:8:2

bone

36 in the ratio 2:4:3

$$36 \div (2 + 4 + 3) = 4$$

8:16:12

appetit

Answers

Start 1: How can you tell if a vampire has a cold?

By his loud coffin.



Start 2: What do skeletons say before eating?

Bone Appetit.



Extension:

The remaining amount is $\frac{5}{7} \times 3 + 8 = 11$, so to share into 11 parts we calculate:

$$\frac{5}{7} \div 11 = \frac{5}{77}$$

Bilal gets 3 parts:

$$3 \times \frac{5}{77} = \frac{15}{77}$$



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