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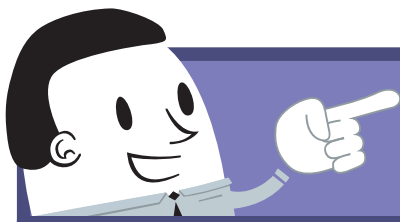


& Proportion

Numeracy

- Conviction Chaos
- Treacherous Travels
 - Crazy Crew

Resource code: 27053118



Conviction Chaos

The first fleet carried the first European settlers to Australia. As the United States of America, Britain could no longer send the convicts and decided to create a penal colony in Australia. Many convicts committed petty crimes, due to the harsh living conditions in Great Britain.



Q1 Calculate the ratios of the following first fleet passengers



a) navy officers : convicts



convicts



c) female convicts : navy officers



d) convicts : navy officers



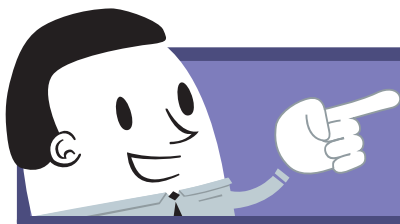
navy officers



f) male convicts : female convicts



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Conviction Chaos

Q2

The information below illustrates some examples of crimes and the number of people deported. Use this information to identify the simplest form.



Assault:
32

Passing Forged
Notes:
12

Stealing F
49

Fraud:
36

Stealing Personal
Items:
40

Damage of
Property:
66

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a) Indecent behaviour to pas

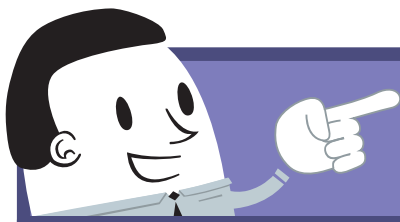
b) Stealing personal i

c) Fraud to d

d) St



al items



Conviction Chaos

Q3

Use the information provided on the previous page to identify their simplest form.

a) Proportion of all crimes that are indecent behaviour

b) Proportion of all crimes that are stealing personal items

c) Proportion of all crimes that are fraud

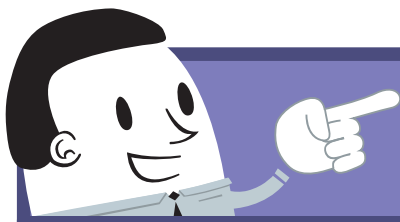
d) Proportion of all crimes that are theft

e) Proportion of all theft



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Treacherous Travels

The journey of the first fleet was long and living conditions on the fleet left Portsmouth on the 13th May, 1787, travelling over 24,000km. The fleet sailed into Port Jackson on the 26th January, 1788. Port Jackson is now Sydney Cove by Captain Arthur Phillip. This day is now celebrated as the first fleet anniversary illustrated on the timeline below.



Q1

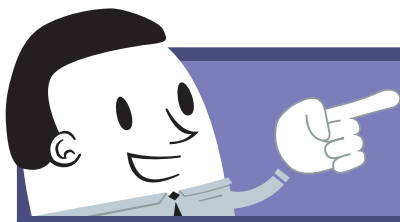
Considering the timeline above, calculate the average speed in km per number of days in the simplest form for each leg of the journey.

a) Portsmouth to Santa Cruz

b) Santa Cruz to Rio de Janeiro

c) Rio de Janeiro to Sydney Bay





Treacherous Travels

Q2

Consider the timeline and calculate the proportions of the average number of days between the following locations, excluding

a) Portsmouth to Rio de Janeiro

b) Santa Cruz to Botany Bay

c) Portsmouth to Botany Bay

Q3

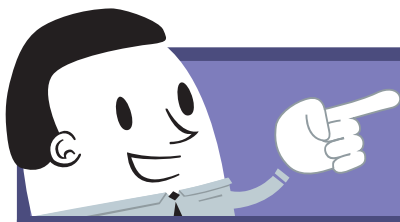
Consider the proportions of average distance travelled per number of days, including time spent docking.

a) Portsmouth to Rio de Janeiro

b) Santa Cruz to Botany Bay



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Crazy Crew

The first fleet consisted of 11 ships carrying British passengers. **Some of the passengers were convicts.** The approximate number of different passenger groups that embarked on the first fleet at Portsmouth in England and landed in Sydney Cove are given in the table below. Use your knowledge of ratio and proportion to complete the table.



Analyse the following table.

	Embarked at Portsmouth	Landed in Sydney Cove
Officials and passengers	15	
Ships' crew members	324	
Marines	263	
Marines' wives and children	46	10 + 11 born
Convicts (men)	500	
Convicts (women)	100	
Convicts (children)	100	10 + 11 born
Total		1360

Q1 Answer the following questions in the form of a ratio.

a) Ratio of children convicts to total convicts that landed:

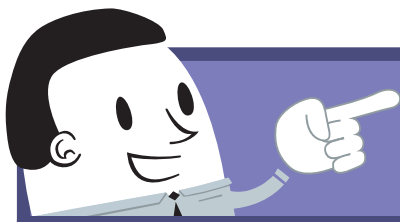
b) Ratio of adult convicts to total convicts that landed:

c) Ratio of male convicts to ships' crew members that landed :

Ratio of female convicts to total passengers that landed:



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Crazy Crew

Q2

Compile the information in the table from Question One to answer the ratio questions in their simplest form.

a) Ratio of convicts to non-convicts that embarked:

b) Ratio of convicts to non-convicts that landed:

c) Ratio of convicts that embarked:



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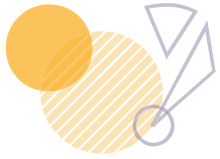
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Mighty Minds Lesson Installs 'Fundamentals' Lessons



Firstly, thank you for your support of Mighty Minds and our resources. We provide quality resources that are both educational and engaging, and we hope you love our works.

To assist you in using this resource, we have compiled some information below:

About this resource

This Mighty Minds 'Fundamentals' Lesson focuses on a specific skill (e.g. Maps and presents this skill through a theme from the Australian Curriculum (e.g. Geography). This lesson is also targeted at a certain skill level (e.g. Year 5) and is designed for completing work that is suited to them.

How to use this resource

Our 'Fundamentals' Lessons are split into two parts: Teacher Resources and Student Resources. Each contain different types of resources.

The student workbook contains:

- The main title page; and
- The blank student workbook.

The teacher resources contain:

- This set of instructions on how to use the resources;
- The Teacher's Copy of the Lesson, which includes the lesson plan, objectives, and resources needed to teach the lesson;
- The Item Description, which includes the lesson's aims, as well as extension ideas;
- The student model responses, which include model responses on the student worksheets to ensure that answers are correct and clear;
- The teacher's copy of the student worksheets, which include more detailed explanation of the model responses or answers to questions;
- Final notes on the lesson.

We recommend that you print out the Student Workbook (the first set of pages) for the students. If students are unable to access the Student Workbook, you may also like to provide them with the student answer sheet.

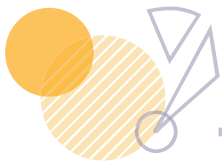


Contacting us

We would love to hear from you. If you email us with suggested changes to any lesson, we will be happy to consider them. We will send you the revised lesson – free of charge.

You can email us at resources@mightyminds.com.au and we'll get back to you as soon as we can.





Ratio & Proportions



Ratios, proportions and fractions are all different ways of comparing

Ratios

A **ratio** is a comparison of two or more numbers that show how many times one number is compared in this way using a colon (:) between the numbers

e.g. A class of 8 students contains 5 girls and 3 boys.
This is a ratio of 5 girls to 3 boys, or 5:3.

Like fractions, ratios are reduced to their simplest form by dividing both values in the ratio (called the highest common factor) by the largest number that goes into both values by it.

e.g. A class of 10 students contains 6 boys and 4 girls.
This is a ratio of 6 boys to 4 girls.
6 and 4 have a HCF of 2.
 $6 \div 2 = 3$
 $4 \div 2 = 2$
Therefore, the simplest ratio is 3:2.

Proportions

A **proportion** is also a comparison of two numbers, but is presented as a fraction of a whole, and as such is expressed using the word "out of".

e.g. A class of 8 students contains 5 boys.
This means 5 out of 8 are boys, or 5/8.

Proportions can be written in fraction or whole number form by dividing both sides by their highest common factor.

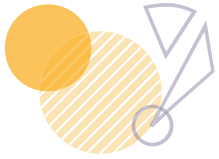
e.g. A class of 10 students contains 6 boys and 4 girls.
This means 6 out of 10 are boys, or 6/10.

The simplest form of this proportion is 3 out of 5, or 3/5.

While a ratio compares parts, whereas a proportion compares a part to a whole.

One way to remove decimals is to multiply both parts of a ratio or proportion by 10 until the decimal is removed. The ratio/proportion can then be simplified as necessary. Most of the time, this step may not require this, however some more complicated ratios/proportions may require this. Decimals should also be removed in order to make the simplification less difficult.





Item Description

Please note: any activity that is not completed during class time will be undertaken at a later date.



'Conviction Chaos', 'Treacherous' and 'Crash Landing' - Ratio and Proportion

Activity Description:

- Students are required to answer ratio and proportion problems related to the first fleet.
- In the first activity, 'Conviction Chaos' students are required to solve ratio problems about the convicts on the first fleet in their simplest form.
- The second activity, 'Treacherous' involves the journey of the first fleet giving dates and distances. Students are required to calculate the proportion of distance travelled to their final destinations.
- Finally, in the activity 'Crash Landing' students are required to solve proportion based questions using a table of the number of convicts in the first fleet.

Purpose of the activities:

- To provide students with opportunities to solve ratio and proportion problems and to develop their understanding of the history of the first fleet.

Key Learning Objectives:

- Apply ratio and proportion to solve problems (Φ5)
- Use pictures/ illustrations (α5)
- Use calculators (Φ16)
- Follow a sequence of steps to achieve the required answer (Φ37)

Summary:

Approximately one hour to complete – 20 minutes per activity.



Before students commence the activities. This may be more helpful for teachers to demonstrate the first part of each question to model answer.

This Item Description is continued on the next page...





Item Description – continued

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‘Conviction Chaos’, ‘Treacherous Turn’, ‘The Great Migration’

• **Teaching Notes (Cont’d):**

- Students who find the activity difficult may benefit from working in pairs.
- Students may benefit from the use of concrete materials or numbers.
- Students who finish early may like to create a story. This activity is useful and significant in everyday life.

• **Follow Up/ Class Discussion Questions:**

- What are some of the possible reasons for the increase in the number of passengers who embarked on the ship? How many people who landed in Australia?
- What are some strategies for solving ratio and proportion based questions?
- What did students learn from this activity? What are some question based questions, and what strategies could be used in the future?

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Conviction Chaos

The first fleet carried the first European settlers to Australia. As the United States of America, Britain could no longer send the convicts and decided to create a penal colony in Australia. Many convicts committed petty crimes, due to the harsh living conditions in Great Britain.



Q1 Calculate the ratios of the following first fleet passengers



a) navy officers : convicts

$$4:6 = 2:3$$



convicts



c) female convicts : navy officers

$$3:9 = 1:3$$



d) convicts : navy officers

$$8:2 = 4:1$$



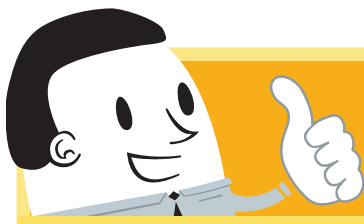
navy officers



f) male convicts : female convicts

$$12:9 = 4:3$$





Conviction Chaos

Q2

The information below illustrates some examples of crimes and the number of people deported. Use this information to identify the ratio in its simplest form.



Assault:
32

Passing Forged
Notes:
12

Stealing F
49

Fraud:
36

Stealing Personal
Items:
40

Damage of
Property:
66

Find the greatest common factor (GCF) of the numbers by dividing the larger number by the smaller number:
Example: 10 and 20
10 ÷ 10 = 1
20 ÷ 10 = 2
GCF: 10
Simplified ratio: 1:2

a) Indecent behaviour to pass

2:12 = 1:6

b) Stealing personal items

40:2 = 20:1

c) Fraud to damage property

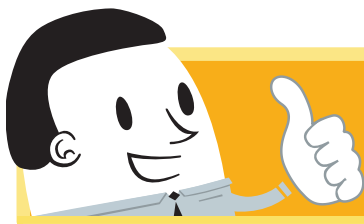
36:66 = 6:11

d) Stealing forged notes

SAMPLE



al items



Conviction Chaos

Q3

Use the information provided on the previous page to identify their simplest form.

a) Proportion of all crimes that are indecent behaviour

All crimes: $32 + 40 + 49 + 66 + 63 + 36 + 2 + 12 = 300$

2 out of 300 = 1 out of 150

b) Proportion of all crimes that are stealing personal items

40 out of 300 = 2 out of 15

c) Proportion of all crimes that are fraud

36 out of 300 = 3 out of 25

d) Proportion of all crimes that are thefts

All thefts: $40 + 49 + 63 = 152$

152 out of 300 = 38 out of 75

e) Proportion of all thefts that are stealing personal items

40 out of 152 = 5 out of 19



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Conviction Chaos

Question One:

Students were required to calculate the ratios of the first fleet illustrations. They were required to present their answers in the form of a ratio. They were also required to provide the term HCF, which stands for highest common factor.

Model Response:

a) navy officers : convicts
 $4 : 6$ (both 4 and 6 have the HCF of 2)
 $= (4 \div 2) : (6 \div 2)$
 $= 2 : 3$

b) female convicts : male convicts
 $4 : 8$ (HCF = 4)
 $= (4 \div 4) : (8 \div 4)$
 $= 1 : 2$

c) female convicts : navy officers
 $3 : 9$ (HCF = 3)
 $= (3 \div 3) : (9 \div 3)$
 $= 1 : 3$

d) convicts : navy officers
 $8 : 2$ (HCF = 2)
 $= (8 \div 2) : (2 \div 2)$
 $= 4 : 1$

e) female convicts :

on the number of people that were deported for a range of different combinations. In this question, they were required to identify the ratios of a range of combinations. The answers are provided on the following page.

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Question Two:

Model Response:

- a) Indecent behaviour to passing forged notes

$$\begin{aligned} 2 : 12 \text{ (HCF} = 2) \\ = (2 \div 2) : (12 \div 2) \\ = 1 : 6 \end{aligned}$$

- b) Stealing personal items to indecent b

$$\begin{aligned} 40 : 2 \text{ (HCF} = 2) \\ = (40 \div 2) : (2 \div 2) \\ = 20 : 1 \end{aligned}$$

- c) Fraud to damage of property

$$\begin{aligned} 36 : 66 \text{ (HCF} = 6) \\ = (36 \div 6) : (66 \div 6) \\ = 6 : 11 \end{aligned}$$

- d) Stealing animals to

$$\begin{aligned} 63 : 49 \text{ (HCF} = 7) \\ = (63 \div 7) : (49 \div 7) \\ = 9 : 7 \end{aligned}$$

- e) Fraud to p

$$\begin{aligned} 36 : 66 \text{ (HCF} = 6) \\ = (36 \div 6) : (66 \div 6) \\ = 6 : 11 \end{aligned}$$

- f) A

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Question Three (cont'd):

Model Response:

- a) Proportion of all crimes that are indecent behavior
 $32 + 40 + 49 + 66 + 63 + 36 = 286$
2 out of 300 (HCF = 2)
 $= (2 \div 2)$ out of $(300 \div 2)$
 $= 1$ out of 150
- b) Proportion of all crimes that are stolen property
40 out of 300 (HCF = 20)
 $= (40 \div 20)$ out of $(300 \div 20)$
 $= 2$ out of 15
- c) Proportion of all crimes that are thefts
36 out of 300 (HCF = 12)
 $= (36 \div 12)$ out of $(300 \div 12)$
 $= 3$ out of 25
- d) Proportion of all crimes that are violent crimes
All thefts: $32 + 40 + 49 + 66 + 63 + 36 = 286$
152 out of 286 (HCF = 2)
 $= (152 \div 2)$ out of $(286 \div 2)$
 $= 76$ out of 143
- e) Proportion of all crimes that are violent crimes
All items: $32 + 40 + 49 + 66 + 63 + 36 = 286$
152 out of 286 (HCF = 2)
 $= (152 \div 2)$ out of $(286 \div 2)$
 $= 76$ out of 143



SAMPLE





Treacherous Travels

The journey of the first fleet was long and living conditions on the fleet left Portsmouth on the 13th May, 1787, travelling over 24 000km. The fleet sailed into Port Jackson on the 26th January, 1788. Port Jackson is now Sydney Cove by Captain Arthur Phillip. This day is now celebrated as the 200th anniversary and is illustrated on the timeline below.



Q1

Considering the timeline above, calculate the average speed in km per number of days in the simplest form.

a) Portsmouth to Santa Cruz

$8000\text{km} / 21\text{ days}$

b) Santa Cruz to Rio de Janeiro

$2000\text{km} / 56\text{ days}$

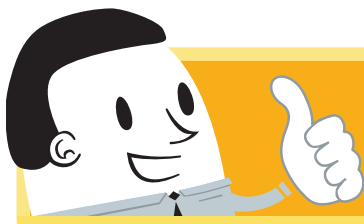
$= 250\text{km} / 7\text{ days}$

c) Rio de Janeiro to Sydney Bay

$6000\text{km} / 39\text{ days}$

$= 200\text{km} / 13\text{ days}$





Treacherous Travels

Q2

Consider the timeline and calculate the proportions of the average distance travelled per number of days between the following locations, excluding

a) Portsmouth to Rio de Janeiro

$$(8000\text{km} + 2000\text{km}) / (21 \text{ days} + 56 \text{ days})$$

$$= 10000\text{km} / 77 \text{ days}$$

b) Santa Cruz to Botany Bay

$$(2000\text{km} + 6000\text{km} + 9000\text{km}) / (56 \text{ days} + 21 \text{ days} + 15 \text{ days})$$

$$= 17000\text{km} / 92 \text{ days}$$

$$= 184.8\text{km} / \text{day}$$

c) Portsmouth to Botany Bay

$$(8000\text{km} + 2000\text{km} + 6000\text{km}) / (21 \text{ days} + 56 \text{ days} + 97 \text{ days})$$

$$= 16000\text{km} / 174 \text{ days}$$

Q3

Consider the proportions of average distance travelled per number of days between the following locations, including time spent docking.

a) Portsmouth to Rio de Janeiro

$$(8000\text{km} + 2000\text{km}) / (21 \text{ days} + 56 \text{ days} + 15 \text{ days})$$

$$= 10000\text{km} / 92 \text{ days}$$

$$= 108.7\text{km} / \text{day}$$

b) Santa Cruz to Botany Bay

$$(2000\text{km} + 6000\text{km} + 9000\text{km}) / (56 \text{ days} + 21 \text{ days} + 15 \text{ days} + 97 \text{ days})$$

$$(2000\text{km} + 6000\text{km} + 9000\text{km}) / (21 \text{ days} + 8 \text{ days} + 56 \text{ days} + 31 \text{ days} + 39 \text{ days} + 97 \text{ days})$$

$$= 6250\text{km} / 63 \text{ days}$$



SAMPLE

Treacherous Travels

Question One:

Students were provided with the following timeline describing the route they require to use this timeline to calculate the proportions of average distance travelled between a multiple different locations.

Model Response:

- a) Portsmouth to Santa Cruz
 $8000\text{km} / 21 \text{ days}$
- b) Santa Cruz to Rio de Janeiro
 $2000\text{km} / 56 \text{ days (HCF = 8)}$
 $= (2000 \div 8)\text{km} / (56 \div 8) \text{ days}$
 $= 250\text{km} / 7 \text{ days}$
- c) Rio de Janeiro to Cape of Good Hope
 $6000\text{km} / 39 \text{ days (HCF = 3)}$
 $= (6000 \div 3)\text{km} / (39 \div 3) \text{ days}$
 $= 2000\text{km} / 13 \text{ days}$
- d) Cape of Good Hope to any Bay
 $9000\text{km} / 97 \text{ days}$

Question Two:

Students were required to use the timeline to calculate the proportions of average distance travelled between a different set of locations. As the distances covered more than one location, students were required to exclude time spent docking.

Model Response:

- a) $(8000\text{km} + 2000\text{km} + 6000\text{km} + 9000\text{km}) / (21 \text{ days} + 56 \text{ days} + 39 \text{ days} + 97 \text{ days})$
 $= 15000\text{km} / 192 \text{ days (HCF = 8)}$
 $= (15000 \div 8) \text{ km} / (192 \div 8) \text{ days}$
 $= 1875\text{km} / 24 \text{ days}$
- b) $(2000\text{km} + 6000\text{km} + 9000\text{km}) / (21 \text{ days} + 56 \text{ days} + 39 \text{ days} + 97 \text{ days})$
 $= 17000\text{km} / 213 \text{ days}$

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Question Three:

Students were required to use the same timeline to again calculate the distance travelled per number of days between a different destination. Students were instructed to include time spent docking, and the destination.

Model Response:

a) Portsmouth to Rio de Janeiro
 $(8000\text{km} + 2000\text{km}) / (21 \text{ days} + 14 \text{ days})$
 $= 10000\text{km} / 85 \text{ days (HCF = 5)}$
 $= (10000 \div 5)\text{km} / (85 \div 5)$
 $= 2000\text{km} / 17 \text{ days}$

b) Santa Cruz to Botany Bay
 $(2000\text{km} + 6000\text{km}) / (14 \text{ days} + 97 \text{ days})$
 $= 17000\text{km} / 223 \text{ days}$

c) Portsmouth to Botany Bay
 $(8000\text{km} + 2000\text{km}) / (21 \text{ days} + 8 \text{ days} + 56 \text{ days} + 31 \text{ days} + 9 \text{ days})$
 $= 10000\text{km} / 125 \text{ days}$
 $= 25000\text{km} / 3125 \text{ days}$
 $= (25000 \div 25)\text{km} / (3125 \div 25)$
 $= 620\text{km} / 125 \text{ days}$





Crazy Crew

The first fleet consisted of 11 ships carrying British passengers. **14 of these passengers were convicts.** The approximate number of different passengers that embarked on the first fleet at Portsmouth in England and landed in Sydney Cove is given in the table below. Use your knowledge of ratio and proportion to complete the table.



! Analyse the following table.

	Embarked at Portsmouth	Landed in Sydney Cove
Officials and passengers	15	
Ships' crew members	324	
Marines	263	
Marines' wives and children	46	10 + 11 born
Convicts (men)	576	
Convicts (women)	54	
Convicts (children)		10 + 11 born
Total		1360

Q1 Answer the following questions in the form of a ratio.

a) Ratio of children convicts to male convicts that landed:

14:21 = 2:3

b) Ratio of adult convicts to female convicts that landed:

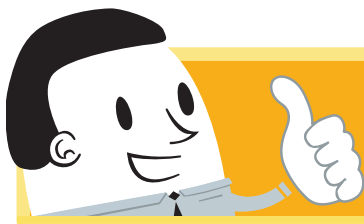
576:54

c) Ratio of children convicts to ships' crew members that landed :

Ratio of children convicts to passengers that landed:



SAMPLE



Crazy Crew

Q2

Compile the information in the table from Question One to answer the ratio questions in their simplest form.

a) Ratio of convicts to non-convicts that embarked:

$$\text{Convicts embarked} = 567 + 202 + 14 = 792$$

$$\text{Non-Convicts embarked} = 15 + 324 + 263 + 46 = 648$$

$$792:648 = 11:9$$

b) Ratio of convicts to non-convicts that landed:

$$\text{Convicts landed} = 540 + 199 + 21 = 760$$

$$\text{Non-convicts landed} = 14 + 270 + 316 = 600$$

$$760:600 = 19:15$$

c) Ratio of convicts that embarked to convicts that landed:

$$\text{Convicts embarked} = 792$$

$$\text{Convicts landed} = 760$$

$$792:760 = 99:95$$



SAMPLE



Crazy Crew

Question One:

Students were provided with a table that described the number of children and adult male convicts that embarked on the first fleet that travelled with the first fleet from Portsmouth to Sydney Cove. Use the information to answer a range of ratio questions in their simplified form. If the simplification is difficult and should consider breaking it down into smaller factors.

Model Response:

a) Ratio of children convicts that embarked:

$$\begin{aligned} &14 : 21 \text{ (HCF = 7)} \\ &= (14 \div 7) : (21 \div 7) \\ &= 2 : 3 \end{aligned}$$

b) Ratio of adult male convicts that embarked to the number of adult male convicts that landed:

$$\begin{aligned} &576 : 540 \text{ (HCF = 36)} \\ &= (576 \div 36) : (540 \div 36) \\ &= 16 : 15 \end{aligned}$$

c) Ratio of ships' crew members that embarked to the number of crew members that landed:

$$\begin{aligned} &324 : 270 \text{ (HCF = 54)} \\ &= (324 \div 54) : (270 \div 54) \\ &= 6 : 5 \end{aligned}$$

d) Ratio of passengers that embarked to the number of passengers that landed:

$$\begin{aligned} &144 : 144 \\ &= 1 : 1 \end{aligned}$$

Question Two:

Students were provided with a table that described the number of children and adult male convicts that embarked on the first fleet that travelled with the first fleet from Portsmouth to Sydney Cove. Use the information to answer a range of more difficult ratio questions in their simplified form. If the simplification is difficult and should consider breaking it down into smaller factors.

Model Response:
a) Ratio of children convicts that embarked:



$$\begin{aligned} &792 : 648 \\ &= 792 : 648 \\ &= (792 \div 72) : (648 \div 72) \\ &= 11 : 9 \end{aligned}$$

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Question Two (cont'd):

b) Ratio of convicts to non-convicts that landed:

$$\begin{aligned} \text{Convicts landed} &= 540 + 199 + 10 + 11 \\ &= 760 \\ \text{Non-convicts landed} &= 14 + 270 + 262 + 45 + 9 \\ &= 600 \\ 760:600 \text{ (HCF} = 40) & \\ &= (760 \div 40) : (600 \div 40) \\ &= 19 : 15 \end{aligned}$$

c) Ratio of convicts that embarked

$$\begin{aligned} \text{Convicts embarked} &= 792 \\ \text{Convicts landed} &= 760 \\ 792 : 760 \text{ (HCF} = 8) & \\ &= (792 \div 8) : (760 \div 8) \\ &= 99 : 95 \end{aligned}$$



SAMPLE





FOR THE TEACHER



End of Learning

Please

If you feel there are any errors in this booklet for you to discuss with your class, you may contact us via email (whole worksheets or individual sheets) for

Alternatively, you may return the entire worksheet to us at a later date.



MIGHTY MINDS
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