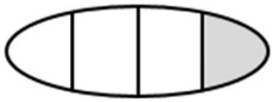
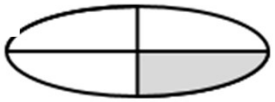
Answers: Week 5 Session 1

Task 1



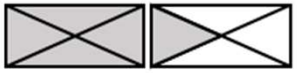
This is not $\frac{1}{4}$



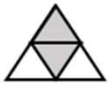
This is $\frac{1}{4}$

The first diagram has one of the four boxes shaded, but it is not a quarter because the parts are **unequal**, the first and last parts are smaller than the central parts.

This is $\frac{5}{8}$



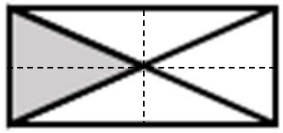
This is $\frac{5}{4} = 1\frac{1}{4}$



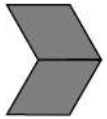
This is $\frac{2}{4}$ *or* $\frac{1}{2}$

This is $\frac{11}{4} = 2\frac{3}{4}$

In this case the parts are not **congruent** (or not the same shape) but they are equal in size. We can see this more clearly in the diagram on the right:

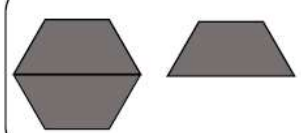


Task 2



= two thirds

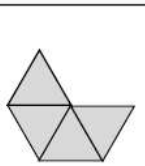
$= \frac{2}{3}$



= three halves

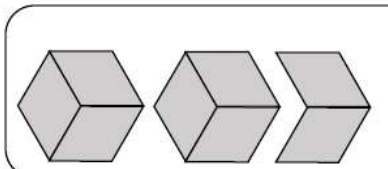
$= \frac{3}{2}$

or one and one half $1\frac{1}{2}$



= four sixths

$= \frac{4}{6}$



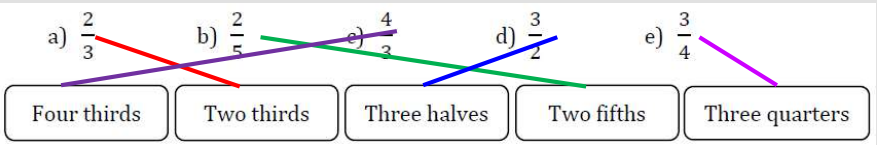
= eight thirds

$= \frac{8}{3}$

or two and two thirds $2\frac{2}{3}$

Exercise

1.



2.

a) i) $A = \frac{1}{3}$ ii) $B = \frac{3}{4}$ iii) $C = 1\frac{1}{3} = \frac{4}{3}$

b) i) Any fraction between 0 and $\frac{1}{3}$, e.g. $\frac{1}{4}$, $\frac{1}{10}$, etc

ii) Any fraction between $\frac{1}{3}$ and $\frac{3}{4}$, e.g. $\frac{1}{2}$, $\frac{2}{3}$, $\frac{3}{7}$, etc

iii) Any fraction between 1 and $\frac{4}{3}$, e.g. $\frac{6}{5}$, $\frac{7}{6}$, $\frac{10}{9}$, etc

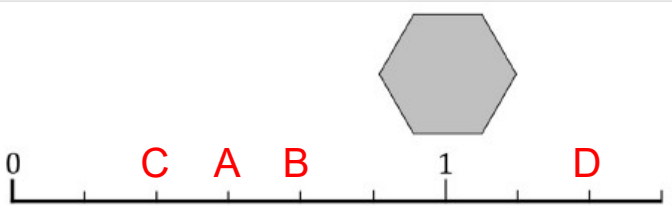
3.

a) $\frac{1}{4}$

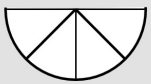
b) $\frac{3}{4}$

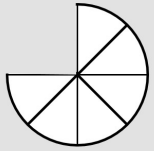
c) $\frac{2}{4} = \frac{1}{2}$

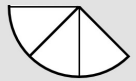
4.

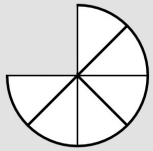


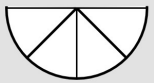
5.

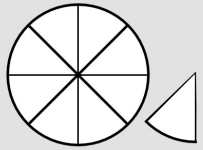
a) 

b) 

c) 

d) 

e) 

f) 

D1.

Yes, it will always be possible. By increasing the value of the denominator it is possible to achieve smaller and smaller divisions. E.g.:

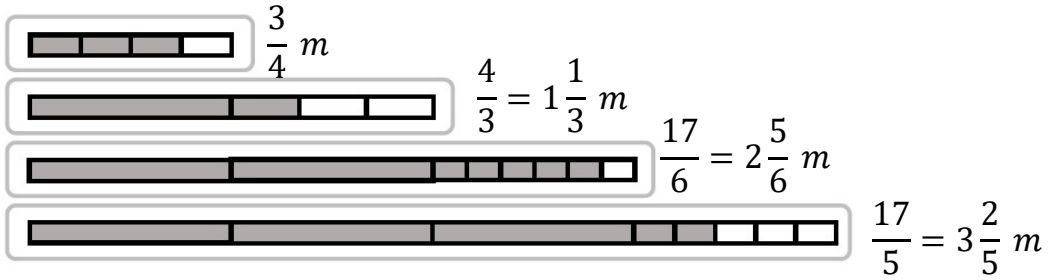
Between $\frac{3}{4}$ and $\frac{4}{5}$: $\frac{31}{40}$

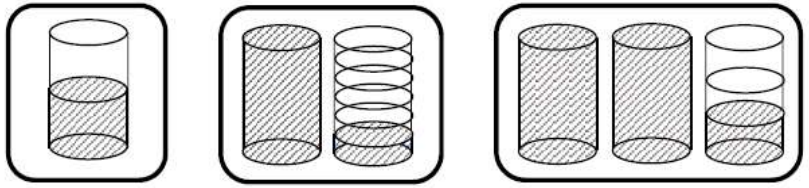
Between $\frac{31}{40}$ and $\frac{4}{5}$: $\frac{63}{80}$

and so on…

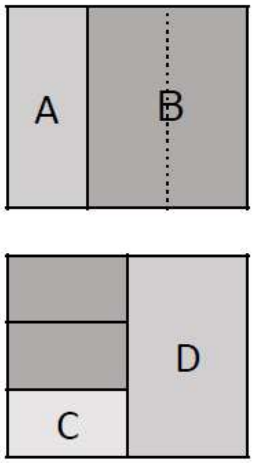
Answers: Week 5 Session 2

Task 1





Task 2



Use the diagrams to complete the statements:

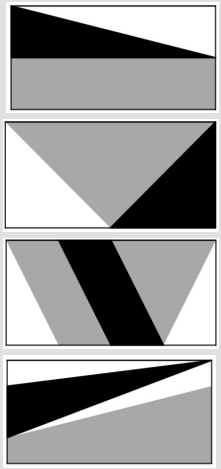
Section A is $\frac{1}{3}$ of the farm or **2** acres

Section B is $\frac{2}{3}$ of the farm or 4 acres

Section C is $\frac{1}{6}$ of the farm or 1 acres

Section D is $\frac{1}{2}$ of the farm or 3 acres

Exercise

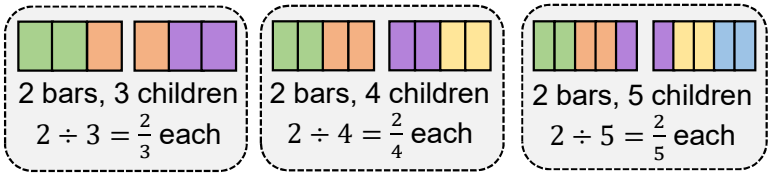
1.	2.	3.	4.	5.	6.	D1.
i) $\frac{1}{4}\ m^2$ ii) $\frac{3}{4}\ m^2$ iii) $\frac{5}{6}\ m^2$ iv) $\frac{1}{6}\ m^2$	a) $\frac{2}{3}\ L$ b) $\frac{5}{8}\ L$ c) $1\frac{1}{3}\ L$	$\frac{1}{2}\ L$ in each of Billy and Tommy's containers. Together they have $1\ L$. The new container has capacity $3\ L$. **So the new container is $\frac{1}{3}$ full.**	a) 15 minutes b) $\frac{10}{12} = \frac{5}{6}$ of a full turn c) $\frac{1}{12}$ of a full turn d) $\frac{1}{24}$ of a full turn	a) Black: $\frac{2}{4} = \frac{1}{2}\ m^2$ Grey: $\frac{1}{4}\ m^2$ White: $\frac{1}{4}\ m^2$ b) Black: $\frac{1}{4}\ m^2$ Grey: $\frac{1}{4}\ m^2$ White: $\frac{1}{2}\ m^2$ c) Black: $\frac{1}{4}\ m^2$ Grey: $\frac{1}{4}\ m^2$ White: $\frac{1}{2}\ m^2$	Various possibilities, e.g.: 	a) $\frac{1}{8}\ m$ b) $\frac{1}{3}\ m$ c) $\frac{3}{10}\ m$ d) $\frac{7}{8}\ m$ For $\frac{3}{8}\ m$ an angle of $135°$ is required.

Answers: Week 5 Session 3

Task 1

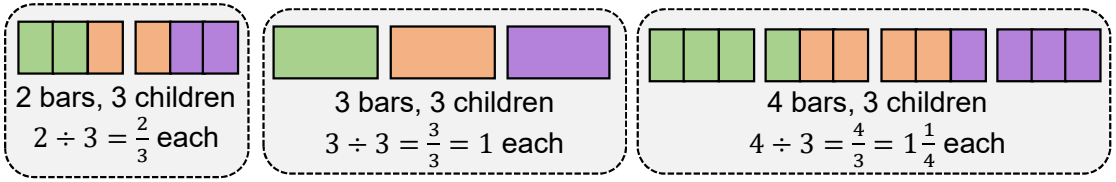
What would happen to the amount of chocolate each child gets if…

a) The number of children they are sharing between goes up



The amount each child gets reduces as the bars are shared between more children.

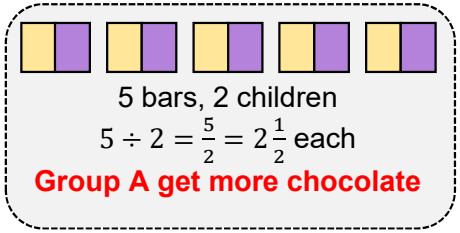
b) The number of chocolate bars they have goes up



The amount each child gets increases as the number of bars increases.

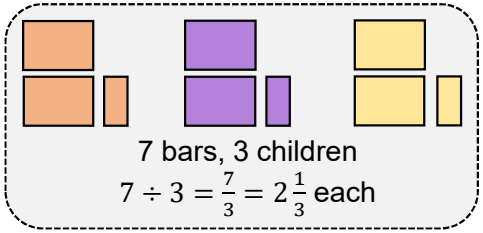
Task 2

Group A
Five bars of chocolate are shared equally by two children.



Sharing approach 1: We can divide each bar by the number of children we are sharing between (2 above) and then give each child one part per bar (five halves as above).

Group B
Seven bars of chocolate are shared equally by three children.



Sharing approach 2: We can give out bars to each child until we can't give them all the same number, then divide the remaining bar(s) by the number of children sharing (3 above).

Can you create two **different** groups where each child gets the **same** amount of chocolate?

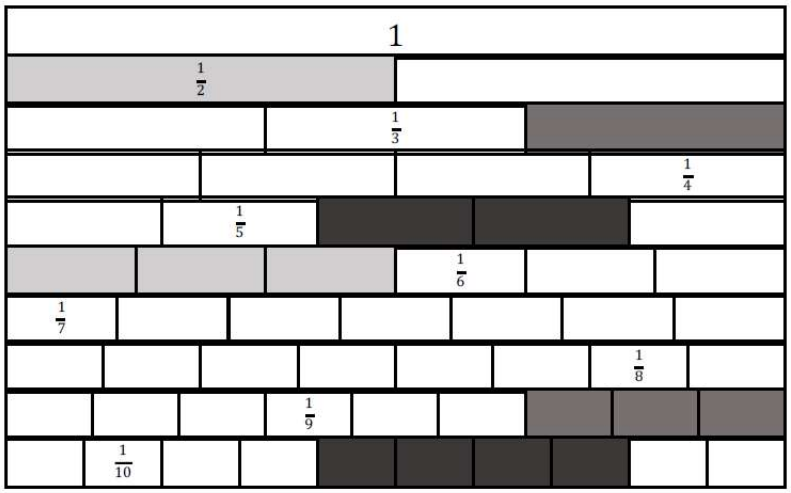
Yes – by finding **equivalent** divisions, e.g. 2 bars 4 children ($2 \div 4$), 3 bars 6 children ($3 \div 6$) , 10 bars 20 ($10 \div 20$) children, etc.

Exercise

1.	2.		3.	4.	5.	6.	D1.
a) $\frac{1}{3}$ b) $\frac{3}{5}$ c) $\frac{5}{7}$ d) $\frac{6}{5} = 1\frac{1}{5}$ e) $\frac{3}{3} = 1$	a) i) $\frac{2}{3}$ ii) $\frac{2}{3}$ iii) $\frac{2}{3}$ iv) $\frac{2}{3}$ v) $\frac{4}{3} = 1\frac{1}{3}$	b) i) $\frac{3}{4}$ ii) $\frac{3}{4}$ iii) $\frac{3}{4}$ iv) $\frac{3}{4}$ v) $\frac{3}{4}$ vi) $\frac{6}{4} = 1\frac{1}{2}$ vii) $\frac{9}{4} = 2\frac{1}{4}$	a) $\frac{2}{3}$ b) $\frac{3}{4}$ c) $\frac{5}{3} = 1\frac{2}{3}$	a) $\frac{2}{3}$ each b) $\frac{2}{5}$ each c) $\frac{2}{7}$ each	a) $\frac{3}{4}$ vs $\frac{3}{5}$ so first group gets more per person ($\frac{3}{4} > \frac{3}{5}$) b) $\frac{2}{3}$ vs $\frac{1}{3}$ so first group gets more per person ($\frac{2}{3} > \frac{1}{3}$) c) $\frac{3}{5}$ vs $\frac{4}{7}$ so first group gets more per person ($\frac{3}{5} > \frac{4}{7}$)	The amount per person decreases. Originally $\frac{4}{7}$ L per person. With new joiners $\frac{5}{9}$ L per person. $\frac{4}{7} > \frac{5}{9}$ so the original group had more per person.	a) Each person gets $\frac{10}{n}$ of a bar. b) With new people each person gets $\frac{11}{n+2}$ of a bar. Amount per person decreases n increases. More per person in original group up to $n = 20$. For $n > 20$ more with joiners.

Answers: Week 5 Session 4

Task 1



$\frac{1}{2} = \frac{3}{6}$ $\quad \frac{1}{3} = \frac{3}{9}$ $\quad \frac{2}{5} = \frac{4}{10}$

Various other equivalences, e.g.:

$$\frac{2}{3} = \frac{6}{9} = \frac{4}{6}$$

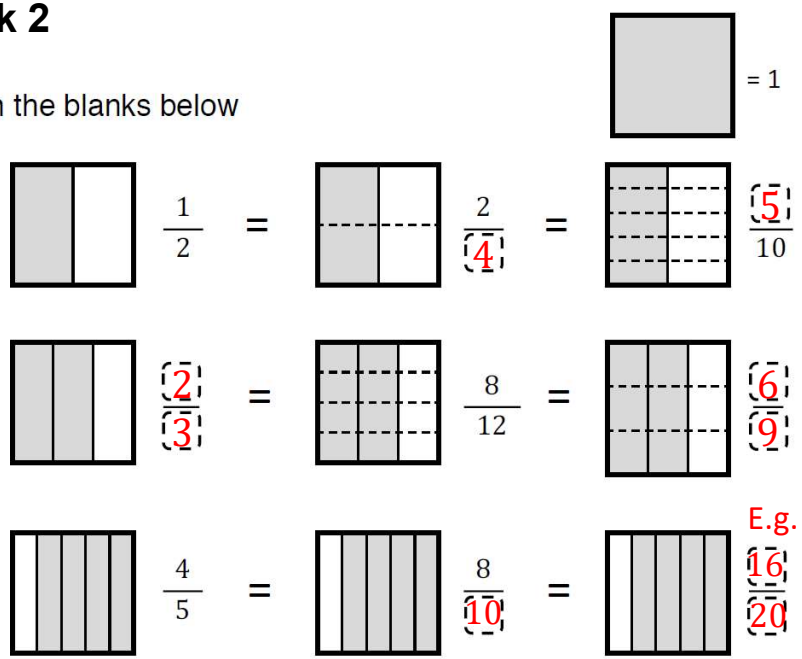
$$\frac{3}{4} = \frac{6}{8}$$

$$\frac{1}{2} = \frac{5}{10} = \frac{4}{8}$$

There are **no equivalences** with sevenths on the diagram. Why not?

Task 2

Fill in the blanks below



Exercise

1.

a) $\frac{2}{3}$

b) $\frac{4}{6}$

c) $\frac{1}{2}$

d) $\frac{3}{6}$

e) $\frac{6}{6}$

f) $\frac{4}{3}$

2.

a)
i) 0.1 m
ii) 0.4 m
iii) 0.7 m
iv) 1.1 m

b)
i) $\frac{1}{10}$ m
ii) $\frac{4}{10}$ m
iii) $\frac{7}{10}$ m
iv) $\frac{11}{10}$ m

3.

a)

i) $\frac{2}{3}$

ii) $\frac{4}{3} = 1\frac{1}{3}$

iii) $\frac{5}{3} = 1\frac{2}{3}$

iv) $\frac{1}{6}$

v) $\frac{5}{6}$

vi) $\frac{9}{6} = 1\frac{3}{6} = 1\frac{1}{2}$

b)
Various possible solutions, e.g.:

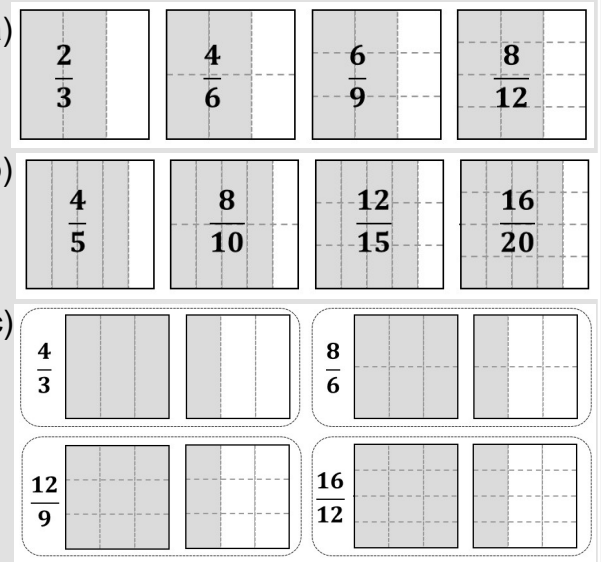
$$\frac{1}{3} = \frac{2}{6}$$
$$\frac{2}{3} = \frac{4}{6}$$
$$\frac{5}{3} = \frac{10}{6}$$

In general:

$$\frac{n}{3} = \frac{2n}{6}$$

4.

Example equivalent fractions:



5.

a) $\frac{1}{2} = \frac{5}{10} = 0.5$

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

c) $\frac{2}{5} = \frac{4}{10} = 0.4$

d) $\frac{6}{5} = \frac{12}{10} = 1.2$

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

f) $\frac{12}{30} = \frac{4}{10} = 0.4$

g) $\frac{36}{20} = \frac{18}{10} = 1.8$

h) $\frac{8}{25} = \frac{32}{100} = 0.32$

i) $\frac{3}{50} = \frac{6}{100} = 0.06$

6.

a) Each person gets $\frac{2}{3}$ of a sausage.

b) i) $\frac{4}{6} = \frac{2}{3}$ each

ii) $\frac{4}{3} = 1\frac{1}{3}$ each

iii) $\frac{8}{6} = 1\frac{2}{6} = 1\frac{1}{3}$ each

D1.

a) i) $\frac{3}{13}$ ii) $\frac{4}{13}$ iii) $\frac{6}{13}$

b) Head: 1.4 m (1 sf); Body: 1.9 m (1 sf)
Tail: 2.8 m (1 sf)