
MONDAY
MON

L.O. Order and compare numbers

Arrange these decimals in ascending order.

1. 8·247, 8·47, 0·847, 84·7
2. 6·119, 1·169, 6·19, 1·69
3. 3·2, 0·37, 0·307, 2·07
4. 4·66, 4·565, 5·644, 5·446

What number lies halfway between:

5. 4·382 and 4·388
6. 1·31 and 1·32
7. 0·145 and 0·155
8. 1·9 and 1·95?

What number lies halfway between:

5. 0·916 and 0·93
6. 2 and 2·25
7. 4·63 and 4·7
8. 0·25 and 0·2?

Calculating with Fractions

Vocabulary

factor, multiple, prime number, common, simplify, denomination, denominator, numerator, proper fraction, mixed number, equivalent fractions, division

$$\frac{7}{8}$$

L.O. Identify common factors, multiples and prime numbers.

What are the common factors of 12 and 15?

Identify the factors of a number by systematically applying the rules of divisibility to the numbers in question (*see chart).

Factors of 12 are

Factors of 15 are

The common factors of 12 and 15

***Rules of divisibility:**

Multiples of:	Rule
2	Units are 2, 4, 6, 8, or 0
3	Digital root is 3, 6 or 9 (e.g. for 75: 7 + 5 = 12; 1 + 2 = 3)
4	Look at the tens and units. If the number, when halved is even, it is a multiple of 4
5	Units are 5 or 0
6	Rule for 3 applies and it is even
7	Double the last digit and subtract it from the rest of the number - if the answer is a multiple of by 7 (including 0), then the original number is divisible by seven If you don't know the new number's divisibility, you can apply the rule again
8	Last 3 digits are divisible by 8
9	Digital root is 9 (e.g. for 873: 8 + 7 + 3 = 18; 1 + 8 = 9)
10	Units are 0

Remember for square numbers there will be an odd number of factors as one of the factors multiplies by itself.

L.O. Identify common factors, multiples and prime numbers.

What are the common multiples of 3 and 4?

Systematically make a list of all multiples of the numbers in question.

A multiple is the product when an integer (whole number) is multiplied by a second integer.

Multiples of 3:

Multiples of 4:

Identify multiples common to both lists. Common multiples are 12 and 24 so far, the next will be 36. These are all multiples of 12 which is the product of 3 and 4.

L.O. Identify common factors, multiples and prime numbers.

Identifying prime numbers

Remember that a prime number has exactly 2 factors (itself and 1).

Apply the rules of divisibility to find all the factors of a number (*see chart).

If a number has exactly two factors then it is prime.

Is 23 a prime number?

"1 is a factor of 23 because it is a factor of all integers.
23 is an odd number so it can't have any even number as a factor.
It isn't a multiple of 3 because its digital root is 5, not 3, 6 or 9.
It isn't a multiple of 5 because its units digit isn't 0 or 5.
It isn't a multiple of 7.
It isn't a multiple of 9 because its digital root isn't 9.
It isn't a multiple of 11.
It is a multiple of 23.
It is a prime number because it has exactly two factors, 1 and 23."

L.O. Simplify fractions

Simplify $\frac{18}{24}$

Factors of 18 are:
1, 2, 3, 6, 9, 18

Factors of 24 are:
1, 2, 3, 4, 6, 8, 12, 24

6 is the highest common factor.

18 ÷ 6 = 3 and **24** ÷ 6 = 4

- sometimes the highest common factor is the numerator itself.

For example $\frac{50}{100}$ (the highest common factor is 50). Dividing both the numerator and the denominator by 50 leaves a fraction of $\frac{1}{2}$.

Example

$\frac{12}{20}\ (\div 4) = \frac{3}{5}$

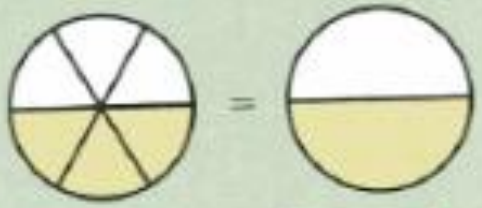
$\frac{12}{20}\ (\div 4) = \frac{3}{5}$

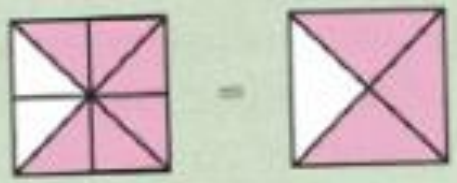
This process is called cancelling. It is shown like this: $\frac{\cancel{12}}{\cancel{20}}\ \frac{3}{5}$

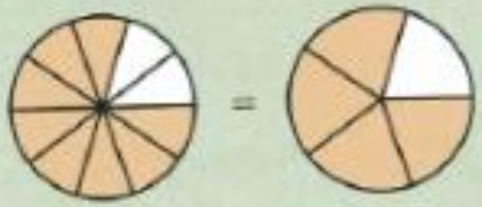
L.O. Simplify fractions

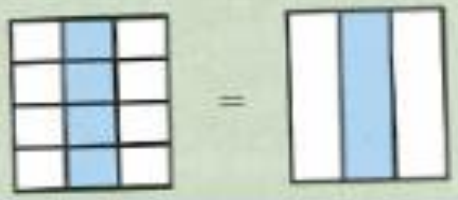
A

Write the equivalent fractions shown in each diagram.

1  =

2  =

3  =

4  =

Copy and complete to simplify the fraction to its lowest terms.

5 $\frac{6}{12} \frac{(\div 6)}{(\div 6)} = \frac{1}{\square}$

6 $\frac{3}{9} \frac{(\div 3)}{(\div 3)} = \frac{\square}{3}$

7 $\frac{9}{12} \frac{(\div 3)}{(\div 3)} = \frac{\square}{\square}$

8 $\frac{4}{10} \frac{(\div 2)}{(\div 2)} = \frac{\square}{\square}$

9 $\frac{8}{12} \frac{(\div 4)}{(\div 4)} = \frac{\square}{\square}$

10 $\frac{4}{8} \frac{(\div 4)}{(\div 4)} = \frac{\square}{\square}$

B

Simplify the fraction shown in each diagram to its lowest terms.

1 

2 

3 

4 

5 

6 

7 

8 

Cancel each fraction to its lowest terms.

9 $\frac{8}{10}$

10 $\frac{3}{9}$

11 $\frac{10}{25}$

12 $\frac{8}{12}$

13 $\frac{2}{8}$

14 $\frac{70}{100}$

15 $\frac{12}{18}$

16 $\frac{6}{8}$

17 $\frac{10}{12}$

18 $\frac{16}{20}$

19 $\frac{7}{21}$

20 $\frac{6}{9}$

L.O. Simplify fractions

C

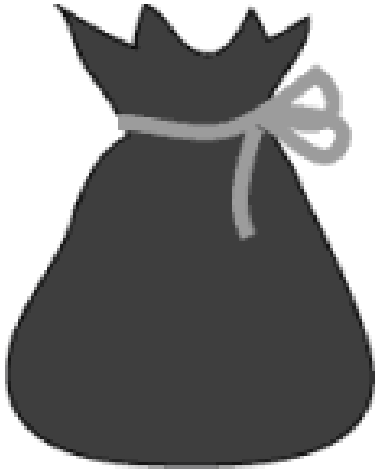
Cancel each fraction to its lowest terms.

1. $\frac{4}{16}$
2. $\frac{30}{100}$
3. $\frac{15}{20}$
4. $\frac{6}{18}$
5. $\frac{85}{100}$
6. $\frac{42}{48}$
7. $\frac{21}{35}$
8. $\frac{44}{100}$
9. $\frac{16}{24}$
10. $\frac{20}{36}$
11. $\frac{16}{40}$
12. $\frac{80}{100}$
13. $\frac{15}{18}$
14. $\frac{14}{24}$
15. $\frac{15}{25}$
16. $\frac{35}{50}$
17. $\frac{30}{96}$
18. $\frac{54}{81}$
19. $\frac{14}{16}$
20. $\frac{32}{72}$

Write >, < or = in each box.

21. $\frac{12}{24} \square \frac{3}{5}$
22. $\frac{4}{5} \square \frac{16}{20}$
23. $\frac{12}{36} \square \frac{1}{4}$
24. $\frac{3}{4} \square \frac{21}{24}$
25. $\frac{12}{30} \square \frac{3}{8}$
26. $\frac{2}{3} \square \frac{15}{20}$
27. $\frac{8}{32} \square \frac{2}{10}$
28. $\frac{3}{5} \square \frac{24}{40}$

Andy and his friend Sam were walking along the road together. Andy had a big bag of marbles.

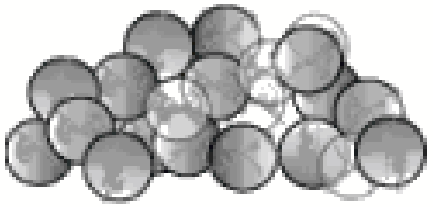


Unfortunately the bottom of the bag split and all the marbles spilled out. Poor Andy!

One third ($\frac{1}{3}$) of the marbles rolled down the slope too quickly for Andy to pick them up. One sixth ($\frac{1}{6}$) of all the marbles disappeared into the rain-water drain.

Andy and Sam picked up all they could but half ($\frac{1}{2}$) of the marbles that remained nearby were picked up by other children who ran off with them.

Andy counted all the marbles he and Sam had rescued.



1

He gave one third ($\frac{1}{3}$) of these to Sam for helping him pick them up. Andy put his remaining marbles into his pocket. There were 14 of them.

How many marbles were there in Andy's bag before the bottom split?

What fraction of the total number that had been in the bag had he lost or given away?

Explain why $\frac{7}{12}$ cannot be simplified.

What is the lowest common multiple of 4 and 6?

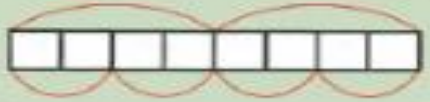
Write down the first five numbers that are multiples of 6 and multiples of 8. Describe what you notice about the sequence and predict the next two common multiples.

What fraction of 1km is 40m, 35m, 450m?

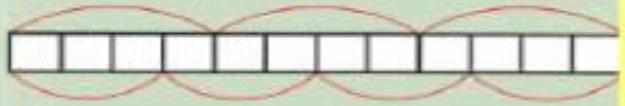
A

Complete each pair of fractions.

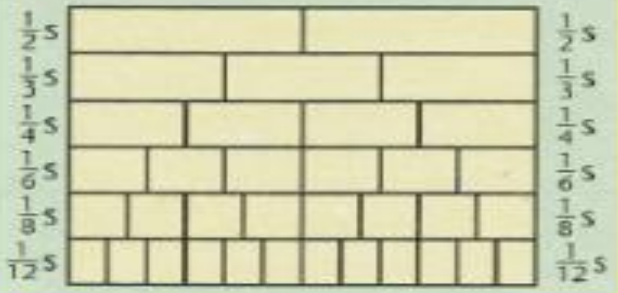
1. $\frac{4}{8} = \frac{1}{\square}$
2. $\frac{2}{8} = \frac{1}{\square}$



3. $\frac{4}{12} = \frac{1}{\square}$
4. $\frac{3}{12} = \frac{1}{\square}$



5. $\frac{2}{10} = \frac{1}{\square}$
6. $\frac{6}{10} = \frac{\square}{\square}$



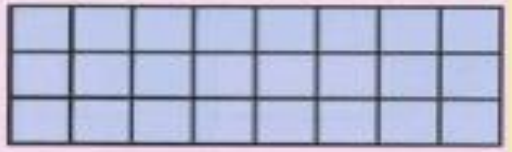
Use the fraction chart. Copy and complete.

7. $\frac{2}{12} = \frac{\square}{6}$
8. $\frac{4}{12} = \frac{\square}{3}$
9. $\frac{2}{8} = \frac{\square}{4}$
10. $\frac{4}{6} = \frac{\square}{3}$
11. $\frac{9}{12} = \frac{\square}{4}$
12. $\frac{3}{6} = \frac{\square}{2}$
13. $\frac{8}{12} = \frac{\square}{3}$
14. $\frac{6}{8} = \frac{\square}{4}$

C

1. What fraction of 20 is:
   a) 2 c) 5
   b) 14 d) 15?
2. What fraction of 80 is:
   a) 8 c) 10
   b) 4 d) 50?
3. What fraction of 45 is:
   a) 9 c) 27
   b) 5 d) 20?
4. What fraction of £1 is:
   a) 5p c) 20p
   b) 95p d) 80p?

B

1. 

   What fraction of 24 is:
   a) 3 c) 8
   b) 9 d) 16?

2. 

   What fraction of 30 is:
   a) 6 c) 5
   b) 24 d) 25?

Cancel each fraction into its simplest form.

3. $\frac{3}{12}$
4. $\frac{6}{9}$
5. $\frac{4}{8}$
6. $\frac{6}{15}$
7. $\frac{90}{100}$
8. $\frac{2}{6}$
9. $\frac{2}{16}$
10. $\frac{12}{18}$
11. $\frac{5}{10}$
12. $\frac{10}{12}$
13. $\frac{12}{16}$
14. $\frac{75}{100}$
15. $\frac{6}{10}$
16. $\frac{14}{20}$
17. $\frac{30}{100}$
18. $\frac{20}{25}$

Page 40

A

1 $\frac{3}{6}$ $\frac{1}{2}$	**3** $\frac{8}{10}$ $\frac{4}{5}$	**5** $\frac{1}{2}$	**7** $\frac{3}{4}$	**9** $\frac{2}{3}$
2 $\frac{6}{8}$ $\frac{3}{4}$	**4** $\frac{4}{12}$ $\frac{1}{3}$	**6** $\frac{1}{3}$	**8** $\frac{2}{5}$	**10** $\frac{1}{2}$

B

1 $\frac{1}{5}$	**5** $\frac{2}{3}$	**9** $\frac{4}{5}$	**13** $\frac{1}{4}$	**17** $\frac{5}{6}$
2 $\frac{3}{4}$	**6** $\frac{5}{6}$	**10** $\frac{1}{3}$	**14** $\frac{7}{10}$	**18** $\frac{4}{5}$
3 $\frac{1}{4}$	**7** $\frac{2}{5}$	**11** $\frac{2}{5}$	**15** $\frac{2}{3}$	**19** $\frac{1}{3}$
4 $\frac{1}{2}$	**8** $\frac{1}{3}$	**12** $\frac{2}{3}$	**16** $\frac{3}{4}$	**20** $\frac{2}{3}$

C

1 $\frac{1}{4}$	**7** $\frac{3}{5}$	**13** $\frac{5}{6}$	**19** $\frac{7}{8}$	**25** >
2 $\frac{3}{10}$	**8** $\frac{11}{25}$	**14** $\frac{7}{12}$	**20** $\frac{4}{9}$	**26** <
3 $\frac{3}{4}$	**9** $\frac{2}{3}$	**15** $\frac{3}{5}$	**21** <	**27** >
4 $\frac{1}{3}$	**10** $\frac{5}{9}$	**16** $\frac{7}{10}$	**22** =	**28** =
5 $\frac{17}{20}$	**11** $\frac{2}{5}$	**17** $\frac{5}{16}$	**23** >	
6 $\frac{7}{8}$	**12** $\frac{4}{5}$	**18** $\frac{2}{3}$	**24** <	

ANSWERS

Page 41

A

1 $\frac{1}{2}$	**4** $\frac{1}{4}$	**7** $\frac{1}{6}$	**10** $\frac{2}{3}$	**13** $\frac{2}{3}$
2 $\frac{1}{4}$	**5** $\frac{1}{5}$	**8** $\frac{1}{3}$	**11** $\frac{3}{4}$	**14** $\frac{3}{4}$
3 $\frac{1}{3}$	**6** $\frac{3}{5}$	**9** $\frac{1}{4}$	**12** $\frac{1}{2}$	

B

1 a) $\frac{1}{8}$	**b)** $\frac{3}{8}$	**c)** $\frac{1}{3}$	**d)** $\frac{2}{3}$	
2 a) $\frac{1}{5}$	**b)** $\frac{4}{5}$	**c)** $\frac{1}{6}$	**d)** $\frac{5}{6}$	
3 $\frac{1}{4}$	**7** $\frac{9}{10}$	**11** $\frac{1}{2}$	**15** $\frac{3}{5}$	
4 $\frac{2}{3}$	**8** $\frac{1}{3}$	**12** $\frac{5}{6}$	**16** $\frac{7}{10}$	
5 $\frac{1}{2}$	**9** $\frac{1}{8}$	**13** $\frac{3}{4}$	**17** $\frac{3}{10}$	
6 $\frac{2}{5}$	**10** $\frac{2}{3}$	**14** $\frac{3}{4}$	**18** $\frac{4}{5}$	

C

1 a) $\frac{1}{10}$	**2 a)** $\frac{1}{10}$	**3 a)** $\frac{1}{5}$	**4 a)** $\frac{1}{20}$	**5 a)** $\frac{1}{20}$	**6** $\frac{5}{8}$
b) $\frac{7}{10}$	**b)** $\frac{1}{20}$	**b)** $\frac{1}{9}$	**b)** $\frac{19}{20}$	**b)** $\frac{13}{20}$	**7** $\frac{13}{20}$
c) $\frac{1}{4}$	**c)** $\frac{1}{8}$	**c)** $\frac{3}{5}$	**c)** $\frac{1}{5}$	**c)** $\frac{1}{40}$	**8** $\frac{2}{5}$
d) $\frac{3}{4}$	**d)** $\frac{5}{8}$	**d)** $\frac{4}{9}$	**d)** $\frac{4}{5}$	**d)** $\frac{7}{40}$	