



# MATHEMATICS



**N.S. Yr. 6 P.65**

**Use known number facts to  
multiply and divide mentally**

## Equipment

Paper, pencil, ruler

# MathSphere

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## Concepts

The mental arithmetic questions on this module are about as hard as they get!

A number of different concepts are involved, mainly to do with decimal fractions.

They are:

1. multiplying a decimal fraction by 10 or 100. This is where add a nought will really get you into trouble

eg  $2.3 \times 10$  is not 2.30..... but is 23

hence it is vital to re-inforce yet again the idea of moving a digit one place to the left when multiplying by 10.

2. dividing a whole number by 10 or 100

eg 23 divided by 10 is 2.3

3. doubling decimal fractions up to two decimal places

4. halving a decimal fraction

5. multiplying a decimal fraction by a single digit

eg  $0.6 \times 4 = 2.4$

6. multiplying a two digit number such as 3.6 by a single digit

eg  $4.5 \times 3 = 13.5$

Some children do get confused by this and a common error is to not cross over the decimal point eg  $4.5 \times 3 = 12.15$  - watch out for this!

**Multiply a decimal fraction by tens and hundreds**

Remember: to multiply by ten move each digit one place to the left, including from the tenths to the units - there will not be any noughts in some of these answers!!

**Complete these written questions:**

1.  $4.8 \times 10 =$

2.  $9.6 \times 10 =$

3.  $7.2 \times 100 =$

4.  $6.4 \times 100 =$

5.  $8.6 \times 10 =$

6.  $1.3 \times 10 =$

7.  $6.8 \times 100 =$

8.  $3.2 \times 100 =$

9.  $7.4 \times$    $= 74$

10.  $0.5 \times$    $= 50$

11.  $10 \times$    $= 7$

12.  $100 \times$    $= 990$

13.  $10 \times$    $= 66$

14.  $100 \times$    $= 720$

**Multiply a decimal fraction by tens and hundreds**

This is where you really must move the digits one place to the left, including from the tenths to the units.

Don't just 'add a nought' pleaseeeeeee!!

**Complete these written questions:**

1.  $3.4 \times 10 =$

2.  $4.6 \times 10 =$

3.  $5.2 \times 100 =$

4.  $6.7 \times 100 =$

5.  $7.1 \times 10 =$

6.  $8.4 \times 10 =$

7.  $9.3 \times 100 =$

8.  $2.9 \times 100 =$

9.  $3.4 \times$

$= 340$

10.  $4.1 \times$

$= 41$

11.  $10 \times$

$= 33$

12.  $10 \times$

$= 126$

13.  $100 \times$

$= 440$

14.  $100 \times$

$= 630$

**Multiplying decimal fractions by 10 and 100****Multiply all these fractions by 10:**

1.  $1.45 \times 10 \rightarrow$    $3.78 \times 10 \rightarrow$

2.  $2.06 \times 10 \rightarrow$    $8.01 \times 10 \rightarrow$

3.  $0.55 \times 10 \rightarrow$    $0.84 \times 10 \rightarrow$

**Multiply all these fractions by 100:**

4.  $6.41 \times 100 \rightarrow$    $4.80 \times 100 \rightarrow$

5.  $8.09 \times 100 \rightarrow$    $2.01 \times 100 \rightarrow$

6.  $5.56 \times 100 \rightarrow$    $9.99 \times 100 \rightarrow$

7.  $0.01 \times 100 \rightarrow$    $0.05 \times 100 \rightarrow$

**Multiplying decimal fractions by 10 and 100****Multiply all these fractions by 10:**

1.  $2.87 \times 10 \rightarrow$    $4.18 \times 10 \rightarrow$

2.  $7.02 \times 10 \rightarrow$    $9.09 \times 10 \rightarrow$

3.  $0.17 \times 10 \rightarrow$    $0.84 \times 10 \rightarrow$

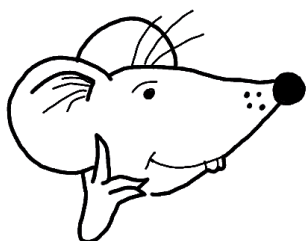
**Multiply all these fractions by 100:**

4.  $2.35 \times 100 \rightarrow$    $5.37 \times 100 \rightarrow$

5.  $1.05 \times 100 \rightarrow$    $6.04 \times 100 \rightarrow$

6.  $7.55 \times 100 \rightarrow$    $8.88 \times 100 \rightarrow$

7.  $0.02 \times 100 \rightarrow$    $0.08 \times 100 \rightarrow$

**Dividing by 10 and 100**

Move each digit one place to the right to divide by 10, two places to divide by 100 - including the units moving across the decimal point into the tenths.

Try these:

1.  $45 \div 10 =$

2.  $66 \div 10 =$

3.  $85 \div 10 =$

4.  $34 \div 100 =$

5.  $68 \div 100 =$

6.  $14 \div 100 =$

7.  $62 \div 10 =$

8.  $51 \div 10 =$

9.  $97 \div 10 =$

10.  $5 \div 100 =$

11.  $7 \div 100 =$

12.  $1 \div 100 =$

13. Find one tenth of 45

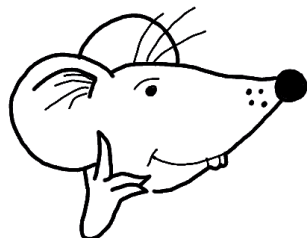
14. Find one tenth of 16

15. Find one hundredth of 2

16. Find one hundredth of 22

17. Find one tenth of 3

18. Find one tenth of 6

**Dividing by 10 and 100**

How do you count cows?

*With a cowculator!!*

Try these:

1.  $65 \div 10 =$

2.  $57 \div 10 =$

3.  $76 \div 10 =$

4.  $25 \div 100 =$

5.  $59 \div 100 =$

6.  $95 \div 100 =$

7.  $53 \div 10 =$

8.  $42 \div 10 =$

9.  $88 \div 10 =$

10.  $4 \div 100 =$

11.  $6 \div 100 =$

12.  $9 \div 100 =$

13. Find one tenth of 36

14. Find one tenth of 97

15. Find one hundredth of 1

16. Find one hundredth of 13

17. Find one tenth of 2

18. Find one tenth of 5



**Doubling and halving decimal fractions**

Try doubling these decimal fractions

1. Double 0.3

2. Double 0.5

3. Double 0.8

4.  $0.6 \times 2 =$ 5.  $0.2 \times 2 =$ 6.  $0.8 \times 2 =$ 

7. Halve 0.4

8. Halve 0.3

9. Halve 0.6

10.  $0.1 \div 2 =$ 11.  $0.5 \div 2 =$ 12.  $0.7 \div 2 =$ 

13. Double 0.2

14. Double 0.9

15. Double 0.7

16.  $0.66 \div 2 =$ 17.  $0.84 \div 2 =$ 18.  $0.52 \div 2 =$ 

19. Halve 0.02

20. Halve 0.08

21. Halve 0.7

22.  $0.52 \div 2 =$ 23.  $0.18 \div 2 =$ 24.  $0.36 \div 2 =$ 

Can you explain how you did these to someone else - perhaps you could help a friend get them correct!!



**Doubling and halving decimal fractions**

Try doubling these decimal fractions

1. Double 0.1

2. Double 0.6

3. Double 0.8

4.  $0.5 \times 2 =$ 5.  $0.3 \times 2 =$ 6.  $0.7 \times 2 =$ 

7. Halve 0.6

8. Halve 0.2

9. Halve 0.8

10.  $0.2 \div 2 =$ 11.  $0.9 \div 2 =$ 12.  $0.5 \div 2 =$ 

13. Double 0.4

14. Double 0.7

15. Double 0.5

16.  $0.26 \div 2 =$ 17.  $0.64 \div 2 =$ 18.  $0.34 \div 2 =$ 

19. Halve 0.04

20. Halve 0.06

21. Halve 0.9

22.  $0.16 \div 2 =$ 23.  $0.38 \div 2 =$ 24.  $0.54 \div 2 =$ 

Can you explain how you did these to someone else - perhaps you could help a friend get them correct!!



**Multiplying a decimal fraction by a single digit**

These are really just the same as multiplying two digits by one.

Eg  $2.6 \times 3$

In my head I do  $26 \times 3 = 78$

So  $2.6 \times 3 = 7.8$

What way do you do them?

1.  $0.6 \times 3 =$

2.  $0.5 \times 4 =$

3.  $0.8 \times 2 =$

4.  $0.1 \times 3 =$

5.  $0.7 \times 5 =$

6.  $0.6 \times 6 =$

7.  $3 \times$    $= 1.5$

8.  $4 \times$    $= 1$

9.  $5 \times$    $= 3$

10.  $7 \times$    $= 2.8$

11.  $0.7 \times 7 =$

12.  $0.8 \times 6 =$

13.  $0.9 \times 9 =$

14.  $0.6 \times 6 =$

15.  $0.7 \times 8 =$

16.  $0.6 \times 9 =$

17.  $7 \times$    $= 3.5$

18.  $9 \times$    $= 1.8$

19.  $4 \times$    $= 2$

20.  $8 \times$    $= 4.8$

**Multiplying a decimal fraction by a single digit**

These are really just the same as multiplying two digits by one.

Eg  $2.6 \times 3$

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So  $2.6 \times 3 = 7.8$

What way do you do them?

1.  $0.5 \times 5 =$

2.  $0.6 \times 6 =$

3.  $0.7 \times 7 =$

4.  $0.1 \times 1 =$

5.  $0.3 \times 3 =$

6.  $0.8 \times 8 =$

7.  $5 \times$    $= 2.5$

8.  $6 \times$    $= 4.2$

9.  $8 \times$    $= 0.8$

10.  $7 \times$    $= 1.4$

11.  $0.2 \times 9 =$

12.  $0.9 \times 5 =$

13.  $0.3 \times 8 =$

14.  $0.4 \times 6 =$

15.  $0.5 \times 9 =$

16.  $0.8 \times 6 =$

17.  $3.4 \times$    $= 10.2$

18.  $4.6 \times$    $= 23$

19.  $5.5 \times$    $= 16.5$

20.  $6.2 \times$    $= 24.8$

**Explaining!**

These sums can all be done in your head, but can you write down how you did them?

eg  $3.6 \times 5$



$30 \times 5$  is 150  
 $6 \times 5$  is 30  
 $150 + 30 = 180$   
so  $3.6 \times 5$  is 18.0

There are other ways!

Or even quicker:  
halve 3.6 and  
multiply by 10

**Explain in the box how you did the sum.**

1.  $3.6 \times 5 =$

2.  $2.1 = 7 \times$

3.  $2.4 \times 3 =$

4.  $18 = 0.9 \times$

5.  $4.6 \times 0.4 =$

6.  $4.9 = 7 \times$

7.  $2.9 \times 5 =$

8.  $0.9 = 3 \times$

**Answers****Page 3**

1. 48      2. 96      3. 720      4. 640      5. 86      6. 13      7. 680  
 8. 320      9. 10      10. 100      11. 0.7      12. 9.9      13. 6.6      14. 7.2

**Page 4**

1. 34      2. 46      3. 520      4. 670      5. 71      6. 84      7. 930  
 8. 290      9. 100      10. 10      11. 3.3      12. 12.6      13. 4.4      14. 6.3

**Page 5**

1. 14.5 and 37.8      2. 20.6 and 80.1      3. 5.5 and 8.4      4. 641 and 480  
 5. 809 and 201      6. 556 and 999      7. 1 and 5

**Page 6**

1. 28.7 and 41.8      2. 70.2 and 90.9      3. 1.7 and 8.4      4. 235 and 537  
 5. 105 and 604      6. 755 and 888      7. 2 and 8

**Page 7**

1. 4.5    2. 6.6    3. 8.5    4. 0.34    5. 0.68    6. 0.14    7. 6.2    8. 5.1    9. 9.7  
 10. 0.05    11. 0.07    12. 0.01    13. 4.5    14. 1.6    15. 0.02    16. 0.22    17. 0.3    18. 0.6

**Page 8**

1. 6.5    2. 5.7    3. 7.6    4. 0.25    5. 0.59    6. 0.95    7. 5.3    8. 4.2    9. 8.8  
 10. 0.04    11. 0.06    12. 0.09    13. 3.6    14. 9.7    15. 0.01    16. 0.13    17. 0.2    18. 0.5

**Page 9**

1. 0.6    2. 1    3. 1.4    4. 1.2    5. 0.4    6. 1.6    7. 0.2    8. 0.15    9. 0.3  
 10. 0.05    11. 0.25    12. 0.35    13. 0.4    14. 1.8    15. 1.4    16. 0.33    17. 0.42  
 18. 0.26    19. 0.01    20. 0.04    21. 0.35    22. 0.26    23. 0.09    24. 0.18

**Page 10**

1. 0.2    2. 1.2    3. 1.6    4. 1    5. 0.6    6. 1.4    7. 0.3    8. 0.1    9. 0.4  
 10. 0.1    11. 0.45    12. 0.25    13. 0.8    14. 1.4    15. 1    16. 0.13    17. 0.32  
 18. 0.17    19. 0.02    20. 0.03    21. 0.45    22. 0.08    23. 0.19    24. 0.27

**Page 11**

1. 1.8    2. 2    3. 1.6    4. 0.3    5. 3.5    6. 3.6    7. 0.5    8. 0.25    9. 0.6    10. 0.4  
 11. 4.9    12. 4.8    13. 8.1    14. 3.6    15. 5.6    16. 5.4    17. 0.5    18. 0.2    19. 0.5    20. 0.6

**Page 12**

1. 2.5    2. 3.6    3. 4.9    4. 0.1    5. 0.9    6. 6.4    7. 0.5    8. 0.7    9. 0.1    10. 0.2  
 11. 1.8    12. 4.5    13. 2.4    14. 2.4    15. 4.5    16. 4.8    17. 3    18. 5    19. 3    20. 4

**Page 13**

1. 18    2. 0.3    3. 7.2    4. 20    5. 1.84    6. 0.7    7. 14.5    8. 0.3