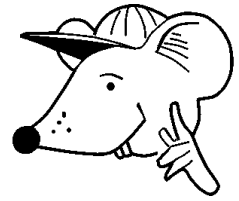


# MATHEMATICS



**N.S. Yr. 6 P.29**

**Use decimal notation.  
Order decimal fractions.**

## Equipment

Paper, pencil, ruler  
Calculator

# MathSphere

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## Concepts

In Year 6 children are expected to be able to read and write decimal fractions to three decimal places and understand the importance of the decimal point.

Number lines where children can count up and down in tenths and hundredths are still important and children should continue to do this frequently in order to gain confidence with the number system.

Unlike earlier decimal work, much of this work takes place out of the context of money and measures. In other words children are expected to work with the decimals themselves, although practical work on this, using real coins, or tape measures is always very helpful.

Calculators may be used, but only as a tool to display the results of mental arithmetic or the knowledge of what operation to perform to achieve the correct answer e.g. in one step change **5.32** to **53.2**. In questions such as this the calculator is of no help if the child does not understand place value.

Some of the hardest work involves word problems such as adding **44** millimetres to **5.6** metres. Children will need a secure grasp of the decimal system in order to answer these correctly.

**Decimal fractions**

The number **4.789** is pronounced '**four point seven eight nine**'.

Note: you do not say 'four point seven hundred and eighty nine'.

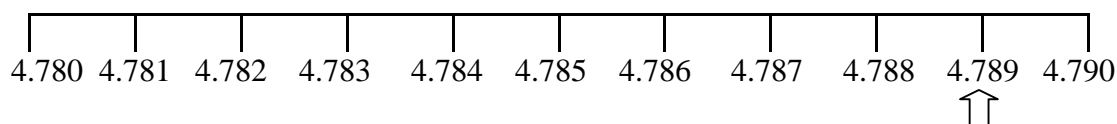
It means four whole ones, 7 tenths of a whole one, 8 hundredths of a whole one and 9 thousandths of a whole one.

In the chart below write down how you say each of these decimal fractions. The first is done for you.

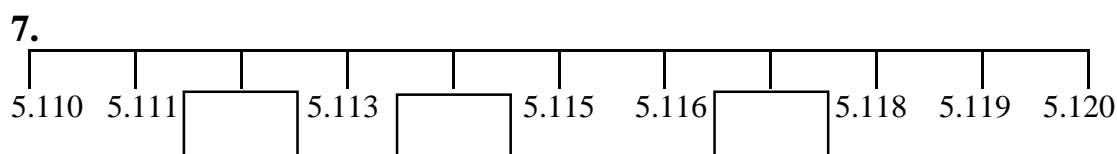
|          |                          |
|----------|--------------------------|
| 1. 5.632 | Five point six three two |
| 2. 7.391 |                          |
| 3. 4.026 |                          |
| 4. 6.193 |                          |
| 5. 2.481 |                          |
| 6. 5.567 |                          |

Where is 4.789 on a number line?

The four means four whole ones and the seven means seven tenths, so 4.7 is a number between 4 and 5. Then the eight means eight hundredths, which means it is a number between 4.7 and 4.8. The nine thousandths means that it is a number between 4.78 and 4.79. Look at the number line below to see where it comes:



Fill in the missing numbers on the number line below. Practise counting up and down each time.



**Decimal fractions**

| units | tenths | hundredths | thousandths |
|-------|--------|------------|-------------|
| 5     | .      | 6          | 7           |
|       |        |            | 8           |

The above number is pronounced five point six seven eight

The five has a value of 5 units, or 5

The six has a value of 6 tenths or 0.6

The seven has a value of 7 hundredths or 0.07

The eight has a value of 8 thousandths or 0.008

**Write down in words the value of the digit underlined:**

**Eg 5.681 → eight hundredths**

1. 3.457

2. 6.412

3. 7.791

4. 8.282

5. 7.107

6. 4.023

7. What does the digit 6 in 3.546 represent?

**Write down in numbers:**

8. two tenths

9. two hundredths

10. two thousandths

11. six thousandths

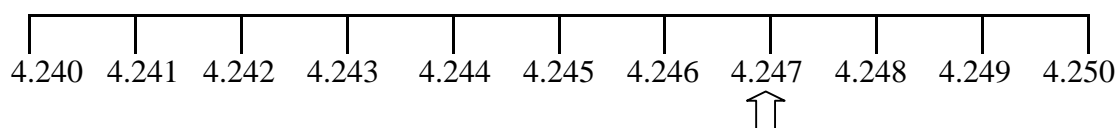
12. four tenths

13. three hundredths

14. eight hundredths

15. seven thousandths

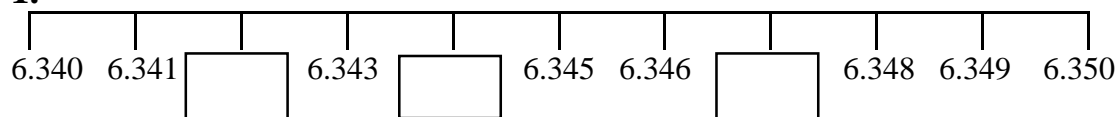
16. one tenth

Decimal fractions

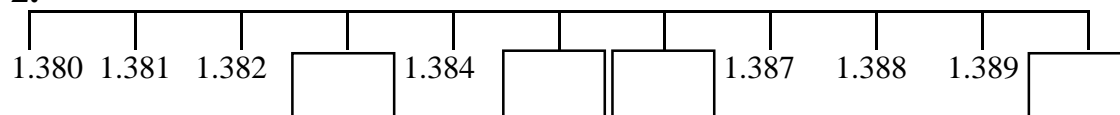
The arrow is pointing at 4.247 We say this, 'four point two four seven'.

Fill in the missing numbers on the number lines below. Practise counting up and down each time.

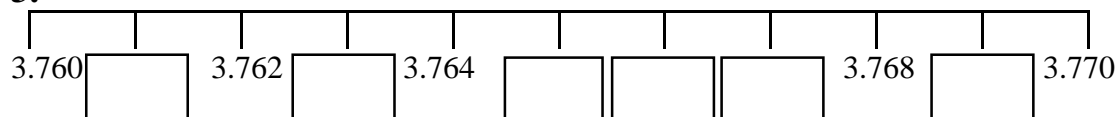
1.



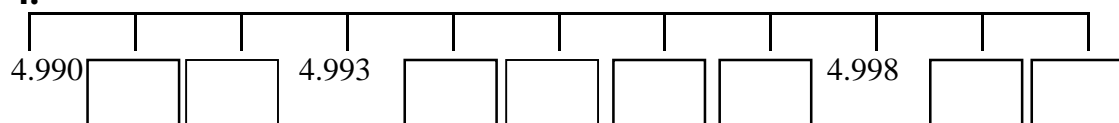
2.



3.



4.



Write these in numbers:

e.g. four point five two one = 4.521

5. Five point six two three

6. Nought point eight five two

7. Eight point nine nought eight

8. Six point nought two seven

9. Six point nought one seven

10. Nine point nine eight six

Decimal fractions

| tens | units | tenths | hundredths | thousandths |
|------|-------|--------|------------|-------------|
|      | 0     | .      | 4          | 3           |
|      |       |        |            | 2           |

The numbers after the decimal point can be thought of in several ways. For example:

0.432

2 thousandths

32 thousandths

432 thousandths

0.768

8 thousandths

68 thousandths

768 thousandths

0.432 can be thought of as 4 tenths 3 hundredths and 2 thousandths

or: 43 hundredths and 2 thousandths

or: 432 thousandths

Write down in figures these numbers, which are all less than one:

1. two hundred and twenty two thousandths

2. three tenths

3. thirty six hundredths

4. four hundred and fifty six thousandths

5. seven tenths

6. four hundredths and five thousandths

Continue the pattern with the next two numbers in these sequences:

7. 2.4

2.6

2.8

3.0

8. 0.12

0.15

0.18

0.21

9. 2.225

2.230

2.235

2.240

10. 5.031

5.033

5.035

5.037

11. 7.632

7.629

7.626

7.623

12. 1 234

123.4

12.34

1.234

**Decimal fractions**

**Write down in figures these numbers, which are all less than one:**

1. thirty six hundredths      2. five tenths  
3. seventy two hundredths      4. one hundred and sixty five thousandths  
5. nine tenths      6. two hundredths and eight thousandths

Continue the pattern with the next two numbers in these sequences:

|     |        |       |       |       |                      |                      |
|-----|--------|-------|-------|-------|----------------------|----------------------|
| 7.  | 4.8    | 5.1   | 5.4   | 5.7   | <input type="text"/> | <input type="text"/> |
| 8.  | 0.85   | 0.80  | 0.75  | 0.70  | <input type="text"/> | <input type="text"/> |
| 9.  | 3.336  | 3.337 | 3.338 | 3.339 | <input type="text"/> | <input type="text"/> |
| 10. | 1      | 0.1   | 0.01  | 0.001 | <input type="text"/> | <input type="text"/> |
| 11. | 5.05   | 5.25  | 5.45  | 5.65  | <input type="text"/> | <input type="text"/> |
| 12. | 77 770 | 7 777 | 777.7 | 77.77 | <input type="text"/> | <input type="text"/> |

13. Write down a decimal fraction between 0.5 and 0.6

14. Write down a decimal fraction between 0.34 and 0.35

**Put the following sequences in order, starting with the smallest:**

15. 34.501      34.51      34.005      34.050  
16. 0.8 m      0.81m      0.088 m      0.188 m  
17. 0.2      0.02      0.002      0.0201  
18. 5.2      5.12      5.17      5.100

**Decimal fractions - calculator work**

**Change 0.3 to 0.03 using only one operation:**

**Answer: by dividing by 10 eg**

|   |   |   |   |   |   |   |      |
|---|---|---|---|---|---|---|------|
| 0 | . | 3 | ÷ | 1 | 0 | = | 0.03 |
|---|---|---|---|---|---|---|------|

**Using only the multiplication or division keys of your calculator solve the problems below. Write down what you had to do to get the correct answer.**

**1.** change 0.2 to 0.02

**2.** change 1.3 to 13

**3.** change 0.41 to 0.041

**4.** change 420 to 4.2

**5.** change 0.023 to 2.3

**6.** change 0.007 to 0.7

If you are unsuccessful with your first attempt try again until you solve the problems.

**Use one of multiplication, division, addition or subtraction to solve the problems below. Write down what you had to do to get the correct answer.**

**7.** change 0.3 to 0.33

**8.** change 5.01 to 4.01

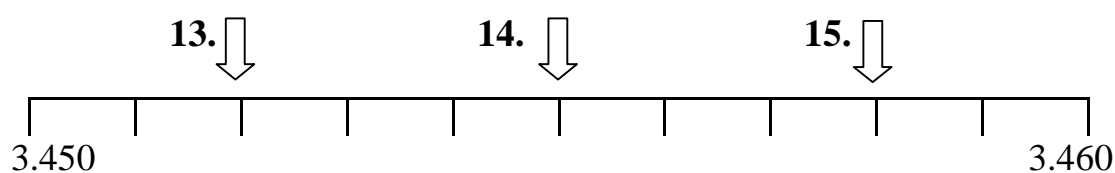
**9.** change 7.3 to 0.073

**10.** change 0.1 to 0.001

**11.** change 77 to 76.1

**12.** change 0.001 to 0.011

Estimate the numbers that the arrows are pointing to:





**Decimal fractions - calculator work**

**Change 0.04 to 0.4 using only one operation:**

**Answer: by multiplying by 10 e.g.**

|   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | . | 0 | 4 | x | 1 | 0 | = | 0 | . | 4 |
|---|---|---|---|---|---|---|---|---|---|---|

**Using only the multiplication or division keys of your calculator solve the problems below. Write down what you had to do to get the correct answer.**

**1.** change 0.6 to 0.006

**2.** change 0.3 to 30

**3.** change 0.52 to 0.052

**4.** change 530 to 5.3

**5.** change 0.034 to 0.34

**6.** change 0.006 to 0.6

If you are unsuccessful with your first attempt try again until you solve the problems.

**Use one of multiplication, division, addition or subtraction to solve the problems below. Write down what you had to do to get the correct answer.**

**7.** change 0.4 to 0.44

**8.** change 6.01 to 3.01

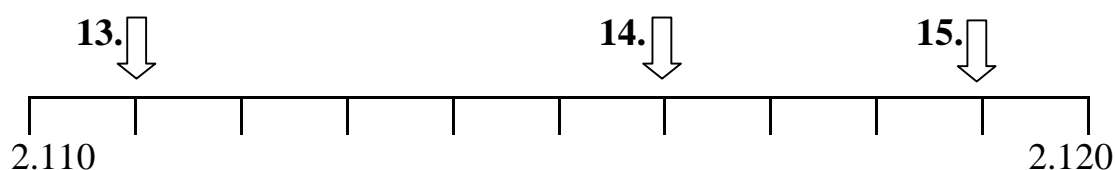
**9.** change 6.2 to 0.062

**10.** change 0.3 to 0.003

**11.** change 44 to 34.1

**12.** change 26 to 25.01

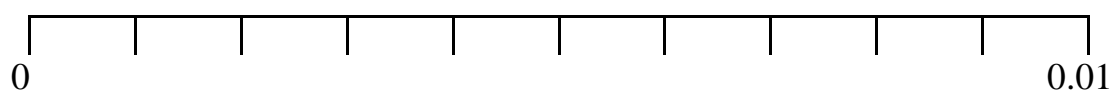
Estimate the numbers that the arrows are pointing to:



**Decimal fractions**

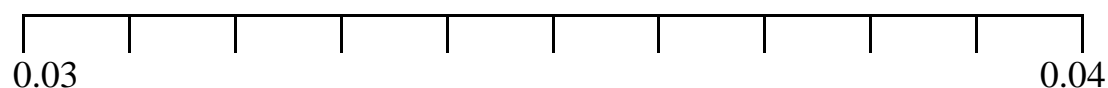
Place these decimals on a line from 0 to 0.01:

1. 0.004      2. 0.006      3. 0.003      4. 0.009      5. 0.005

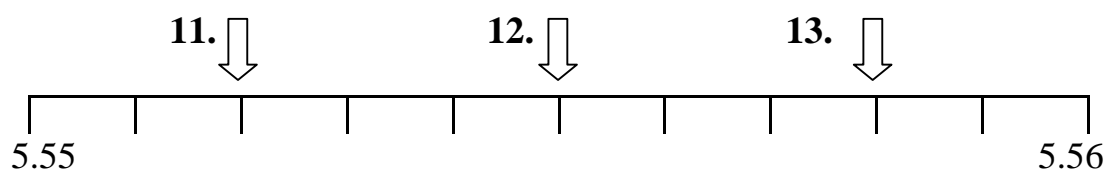


Place these numbers on a number line that goes from 0.03 to 0.04:

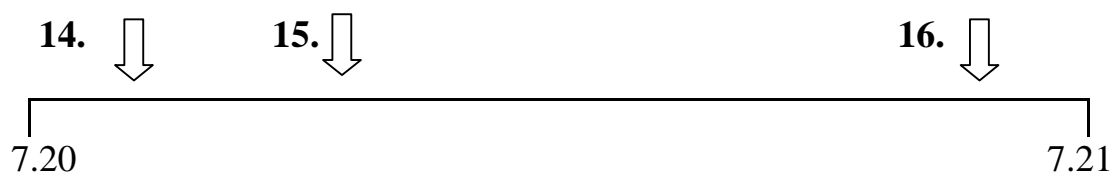
6. 0.032      7. 0.035      8. 0.034      9. 0.037      10. 0.038



Estimate the number that the arrow is pointing to on these questions:



Estimate the number that the arrow is pointing to on these questions:



17. Write down a number between 7.31 and 7.32

18. Write down a number between 4.11 and 4.12

Decimal fractions

Put these numbers in order, starting with the smallest:

1. 5.26    5.62    5.30    5.27    5.07

2. 3.245    3.248    3.244    3.246    3.247

3. 1.2    0.12    1.02    1.002    0.012

4. 0.123    0.312    0.132    0.231    0.321

5. Write 256 ml in litres.

6. Write 2476g in kg.

7. Write 27m in km.

8. Write 2765g in kg.

9. Write 4g in kg.

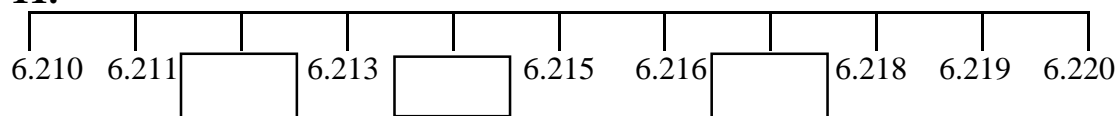
10. Write 23568m in km.

Remember 1000g in  
a kg.

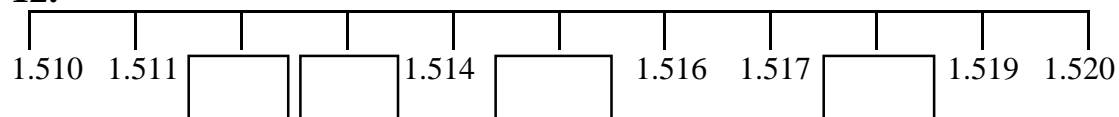


Fill in the missing numbers on the number line below. Practice counting up and down each time.

11.



12.



**Decimal fractions**

1. Phil poured 0.7 litres of water into a one litre container. How many more ml of water is needed to fill the container?
2. 4 identical apples weighed 1.2 kg. How many grams did one of the apples weigh?
3. Lara ran 800 metres in exactly five minutes. Nadine ran 1.2 km in the same time. How much further did Nadine run?
4. Erika made a standing long jump of 1.35 metres. Lola jumped 5 mm further. How far did Lola jump?

Convert these figures, putting the answers in the boxes:

5. 20 mm =  cm

6. 85 ml =  litres

7. 2350 g =  kg

8. 4571 m =  km

9. 2.1 kg =  g

10. 4 cm =  m

**Are these statements true or false?**

11.  $0.1 \text{ kg} < 200 \text{ g}$

12.  $4.3 \text{ litres} = 4 \text{ 300 ml}$

13.  $450 \text{ mm} > 5 \text{ cm}$

14.  $0.086 \text{ kg} = 8.6 \text{ g}$

15.  $25 \text{ ml} > 0.025 \text{ litres}$

16.  $1 \text{ g} = 0.001 \text{ kg}$



Have you remembered -  
the arrow always points  
towards the smaller  
number!

Answers**Page 3**

1. five point six three two 2. seven point three nine one 3. four point nought two six  
4. six point one nine three 5. two point four eight one 6. five point five six seven  
7. 5.112 5.114 5.117

**Page 4**

1. five hundredths 2. four tenths 3. one thousandth 4. eight hundredths  
5. seven thousandths 6. two hundredths 7. six thousandths 8. 0.2 9. 0.02  
10. 0.002 11. 0.006 12. 0.4 13. 0.03 14. 0.08 15. 0.007 16. 0.1

**Page 5**

1. 6.342 6.344 6.347 2. 1.383 1.385 1.386 1.390 3. 3.761 3.763 3.765 3.766  
3.767 3.769 4. 4.991 4.992 4.994 4.995 4.996 4.997 4.999 5.0  
5. 5.623 6. 0.852 7. 8.908 8. 6.027 9. 6.017 10. 9.986

**Page 6**

1. 0.222 2. 0.3 3. 0.36 4. 0.456 5. 0.7 6. 0.045 7. 3.2, 3.4 8. 0.24, 0.27  
9. 2.245, 2.250 10. 5.039, 5.041 11. 7.620, 7.617 12. 0.1234, 0.01234

**Page 7**

1. 0.36 2. 0.5 3. 0.72 4. 0.165 5. 0.9 6. 0.028 7. 6.0, 6.3 8. 0.65, 0.60  
9. 3.340, 3.341 10. 0.0001, 0.00001 11. 5.85, 6.05 12. 7.777, 0.7777  
13. any number between 0.5 and 0.6 14. any number between 0.34 and 0.35  
15. 34.005, 34.050, 34.501, 34.51 16. 0.088m, 0.188m, 0.8m 0.81m  
17. 0.002, 0.02, 0.0201, 0.2 18. 5.100 5.12 5.17 5.2

**Page 8**

1. divide by 10 2. multiply by 10 3. divide by 10 4. divide by 100  
5. multiply by 100 6. multiply by 100 7. add 0.03 8. subtract 1 9. divide by 100  
10. divide by 100 11. subtract 0.9 12. add 0.01 or multiply by 11  
13. 3.452 14. 3.455 15. 3.458

**Page 9**

1. divide by 100 2. multiply by 100 3. divide by 10 4. divide by 100  
5. multiply by 10 6. multiply by 100 7. add 0.04 8. subtract 3 9. divide by 100  
10. divide by 100 11. subtract 9.9 12. subtract 0.99  
13. 2.111 14. 2.116 15. 2.119

**Page 10**

11. 5.552 12. 5.555 13. 5.558 14. 7.201 15. 7.203 16. 7.209  
17. any number between 7.31 and 7.32 18. Any number between 4.11 and 4.12

**Answers****Page 11**

**1.** 5.07, 5.26, 5.27, 5.30, 5.62    **2.** 3.244, 3.245, 3.246, 3.247, 3.248  
**3.** 0.012, 0.12, 1.002, 1.02, 1.2    **4.** 0.123, 0.132, 0.231, 0.312, 0.321  
**5.** 0.256 litres    **6.** 2.476 kg    **7.** 0.027 km    **8.** 2.765 kg    **9.** 0.004 kg    **10.** 23.568 km  
**11.** 6.212    6.214    6.217    **12.** 1.512    1.513    1.515    1.518

**Page 12**

**1.** 300 ml    **2.** 300 g    **3.** 400 metres or 0.4 km    **4.** 1.355 m    **5.** 2 cm    **6.** 0.085 litres  
**7.** 2.35 kg    **8.** 4.571 km    **9.** 2 100 g    **10.** 0.04 m    **11.** true    **12.** true    **13.** true  
**14.** false    **15.** false    **16.** true