21. Decimal Fractions and the Number Line II

1. Counting in 0,05's. Complete the number line:

   (a) How many 0,05's in one whole? *20*
   (b) What common fraction is 0,05 therefore? $\frac{1}{20}$

2. Counting in 0,25's. Complete the number line:

   (a) How many 0,25's in one whole? *4*
   (b) What common fraction is 0,25 therefore? $\frac{1}{4}$

3. Counting in 0,125's. Complete the number line:

   (a) How many 0,125's in one whole? *8*
   (b) What common fraction is 0,125 therefore? $\frac{1}{8}$

22. Decimal Estimates

Try to circle the correct answer **before** you use the calculator to check your estimate:

Calculation	Estimate (Circle one)			Calculator answer
5 × 0,1	5,0	0,5	0,6	
11 × 3,3	36,3	363	3,63	
0,1 × 0,1	0,1	1	0,01	
0,6 × 2,1	126	12,6	1,26	
0,8 ÷ 0,2	0,04	0,4	4	
1,6 ÷ 0,2	8	0,8	0,08	
4,4 × 0,4	17,6	176	1,76	
4,4 ÷ 0,4	1,1	11	0,11	

Fill in >, < or = to make the following true (without using a calculator):

4,8 × 0,3 _____ 7,2 ÷ 0,9

4,8 ÷ 0,3 _____ 7,2 × 0,9

4,8 ÷ 0,3 _____ 7,2 ÷ 0,9

4,8 × 0,3 _____ 7,2 × 0,9

Teacher Notes:

To be able to use a calculator sensibly, estimation skills are very important. One can easily make an error when inputting a number sequence. Therefore one must be able to verify one's answer mentally. This activity's purpose is to give the children a chance to practise these estimation skills.

23. Number Patterns III

Use a pen to complete the following patterns. Add the first number repeatedly. Check your answers with a calculator after each pattern. If you find a mistake, write down why you think it occurred.

❶ 0,25 ; *0,5 ; 0,75 ; 1 ; 1,25 ; 1,5 ; 1,75 ; 2 ; 2,25 ; 2,5 ; 2,75 ; 3 ; 3,25 ; 3,5 ; 3,75 ; 4 ; 4,25 ; 4,5 ; 4,75 ; 5 ; 5,25 ; 5,5*

❷ 0,05 ; *0,1 ; 0,15 ; 0,2 ; 0,25 ; 0,3 ; 0,35 ; 0,4 ; 0,45 ; 0,5; ; 0,55 ; 0,6 ; 0,65 ; 0,7 ; 0,75 ; 0,8 ; 0,85 ; 0,9 ; 0,95 ; 1 ; 1,05 ; 1,1 ; 1,15 ; 1,2*

❸ 0,15 ; *0,3 ; 0,45 ; 0,6 ; 0,75 ; 0,9 ; 1,05 ; 1,2 ; 1,35 ; 1,5 ; 1,65 ; 1,8 ; 1,95 ; 2,1 ; 2,25 ; 2,4 ; 2,55 ; 2,7 ; 2,85 ; 3 ; 3,15 ; 3,3*

❹ 0,09 ; *0,18 ; 0,27 ; 0,36 ; 0,45 ; 0,54 ; 0,63 ; 0,72 ; 0,81 ; 0,9 ; 0,99 ; 1,08 ; 1,17 ; 1,26 ; 1,35 ; 1,44 ; 1,53 ; 1,62 ; 1,71 ; 1,8 ; 1,89 ; 1,98*

❺ 0,125 ; *0,25 ; 0,375 ; 0,5 ; 0,625 ; 0,75 ; 0,875 ; 1 ; 1,125 ; 1,25 ; 1,375 ; 1,5 ; 1,625 ; 1,75 ; 1,875 ; 2 ; 2,125 ; 2,25 ; 2,375 ; 2,5 ; 2,625 ; 2,75*

24. Number Patterns IV

Start with the given number and do the operation in brackets at least 10 times.
E.g. 0,82 (+0,02) → 0,84 + 0,02 → 0,86 + 0,02 → 0,88 + 0,02 → ….

❶ 6,43 (+0,03) → 6,46 → *6,49 → 6,52 → 6,55 → 6,58 → 6,61 → 6,64 → 6,67 → 6,7 → 6,73 → 6,76*

❷ 4,42 (+0,01) → *4,43 → 4,44 → 4,45 → 4,46 → 4,47 → 4,48 → 4,49 → 4,5 → 4,51 → 4,52*

❸ 8,44 (-0,03) → *8,41 → 8,38 → 8,35 → 8,32 → 8,29 → 8,26 → 8,23 → 8,2 → 8,17 → 8,14*

❹ 0,3 (+0,15) → *0,45 → 0,6 → 0,75 → 0,9 → 1,05 → 1,2 → 1,35 → 1,5 → 1,65 → 1,8*

❺ 1,37 (-0,04) → *1,33 → 1,29 → 1,25 → 1,21 → 1,17 → 1,13 → 1,09 → 1,05 → 1,01 → 0,97*

❻ 11,6 (-0,03) → *11,57 → 11,54 → 11,51 → 11,48 → 11,45 → 11,42 → 11,39 → 11,36 → 11,33 → 11,3*

❼ 2,67 (-0,09) → *2,58 → 2,49 → 2,4 → 2,31 → 2,22 → 2,13 → 2,04 → 1,95 → 1,86 → 1,77*

❽ 112,64 (halve) → *56,32 → 28,16 → 14,08 → 7,04 → 3,52 → 1,76 → 0,88 → 0,44 → 0,22 → 0,11*

Teacher Notes (Worksheet 23 and 24):

These are activities to improve the number concept of the learners with decimal fractions up to two decimal places.

See the teacher notes of Number Patterns I and II.

The calculator can make the children think about the significance of zeros at the end of decimal fractions. They may complete a sequence 0,25 ; 0,50; … whereas the calculator will show 0,25 ; 0,5. This must be resolved through discussion.

The teacher can also design more of these number pattern activities for the learners who might need it.

25. Decimal Estimates II

Circle the answer that you think is closest to the correct answer **before** you use the calculator to check your estimate:

Calculation	Estimate (circle one)				Calculator answer	Difference between calculator and estimate
0,01 × 0,3	3	0,03	0,003	0,3		
1,23 × 1,2	0,3	3	1,5	10,6		
3,21 ÷ 0,3	20,4	10,6	1,6	1,04		
4,65 × 2,8	13	2	0,13	1,23		
0,82 ÷ 0,02	4	40	0,4	14		
9,65 × 6,5	600	6,2	63	0,65		
5,25 ÷ 2,1	0,25	25	2,5	250		
1,78 ÷ 3,56	5	50	0,5	0,05		

Fill in >, < or = to make the following true (without using a calculator):

0,46 × 0,02 _____ 1,95 × 0,15

0,46 ÷ 0,02 _____ 1,95 × 0,15

0,46 ÷ 0,02 _____ 1,95 ÷ 0,15
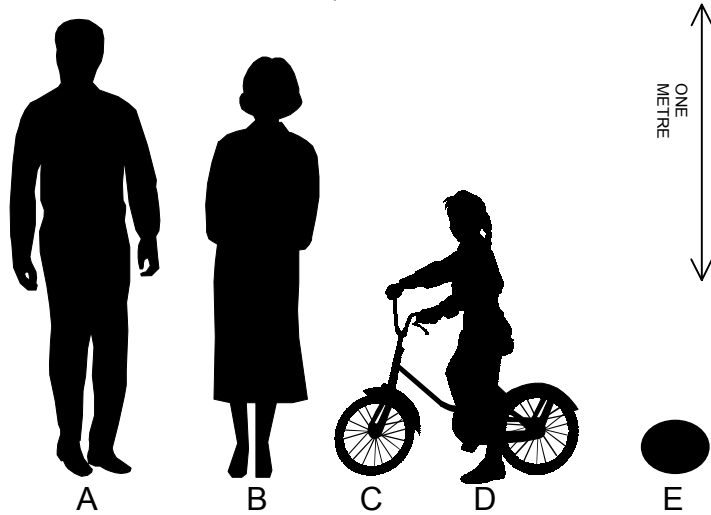
0,46 × 0,02 _____ 1,95 ÷ 0,15

Teacher Notes:

This is an estimation activity which includes hundreds. See teacher notes for Decimal Estimates.

Estimates II (Enrichment):

Use the rulers from the previous activity to measure the following heights: (write your answers in the table below)

ONE
METRE

A   B   C   D   E

		Ruler 1 answer	Ruler 2 answer
A	Man		
B	Woman		
C	Bicycle		
D	Girl		
E	Ball		

Teacher Notes:

It is important to stress the fact that all the sketches are to scale.
The children must use the same rulers that they used for activity 16 (Measuring).
They can be encouraged to draw a 'base line' to start measuring from (especially for the bicycle).

What learners may do:
- Fill in the table row by row – do **not** allow them to do this.
- Struggle to understand that the ruler is now used to measure metres. The whole concept of scale can be confusing and the teacher must help the children to understand. The example of a map can be used.

What learners may learn:
- Grasp the concept of scale
- How to measure objects.

Measuring Again (Enrichment):

Complete the following table by estimating the size of the objects below.
Add the decimal comma and zeros where required:

OBJECT	SIZE (in metres)
The length of a bed	1,80
The wingspan of an aeroplane	30,0
The length of a jigsaw puzzle piece	0,0300
The length of a bus	10,0
The height of a soccer ball	0,200
The length of the lens of a pair of glasses	0,0500
The height of an elephant	2,50
The height of a tree	3,00
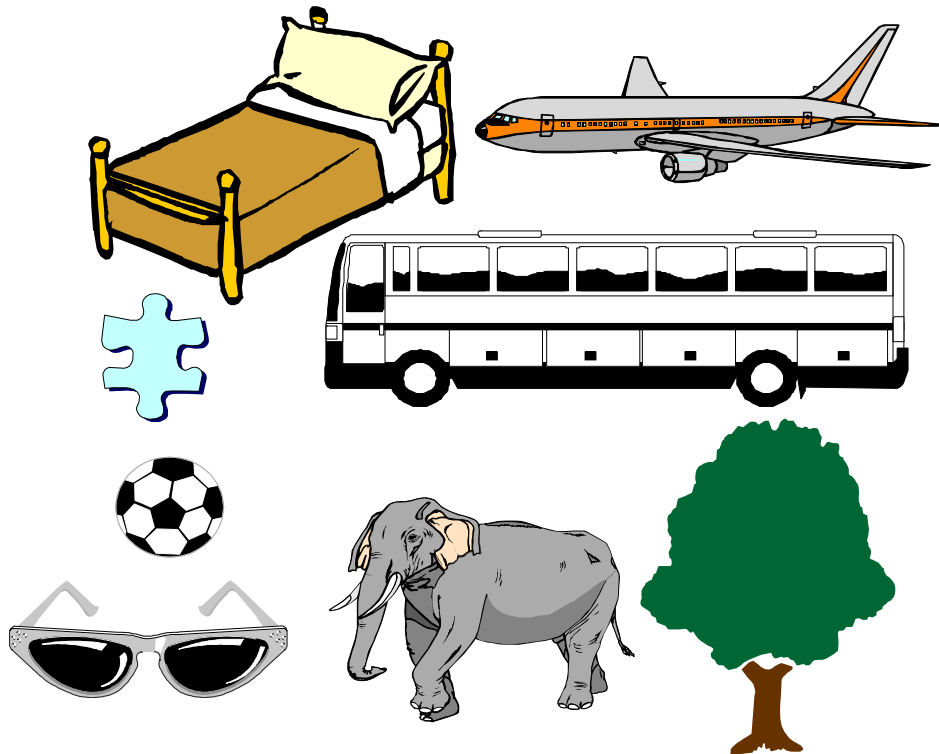
Teacher Notes:

This activity is not about direct measuring, therefore the numbers are given and the learners need only add the decimal comma and zero's if needed. To be able to do this the learners need a stable concept of how long one metre is and that one metre is made up of 100cm. If necessary the teacher can show them with the board ruler or other measuring implements (e.g. measuring tape).

What learners might do:

- They might have problems with the puzzle piece, the soccerball and the lens of the sunglasses, because they are smaller than one meter. This means that they have to add zero's as placeholders.

What learners might learn:

- How to estimate.
- A 'feeling' for the size of different objects. Although, on paper, the bus and the pair of sunglasses are nearly the same size, this is not true in real life.

BACK TO PREVIOUS