EXERCISE 4D

1. Find whether the given division forms a terminating decimal or a non-terminating decimal:

(i) 3 ÷ 8
(ii) 8 ÷ 3
(iii) 6÷ 5
(iv) 5 ÷ 6
(v) 12.5 ÷ 4
(vi) 23 ÷ 0.7
(vii) 42 ÷ 9
(viii) 0.56÷ 0.11

Solution:

(i) 3 ÷ 8

We know that

3 ÷ 8 = 0.375

Therefore, it is terminating decimal.

0.375
8 | 3
− 24
60
− 56
40
− 40
0

(ii) 8 ÷ 3

We know that

8 ÷ 3 = 2.666

Therefore, it is a non-terminating decimal.

2.666
3 | 8
6
20
18
20
18
20
18
2

(iii) 6 ÷ 5

We know that

6 ÷ 5 = 1.2

Therefore, it is terminating decimal.

```
    1.2
5 | 6
    5
    10
    10
    0
```

(iv) 5 ÷ 6
We know that
5 ÷ 6 = 0.8333
Therefore, it is non-terminating decimal.

```
    0.8333
6 | 5
    48
    20
    18
    20
    18
    20
    18
    2
```

(v) 12.5 ÷ 4
We know that
12.5 ÷ 4 = 3.125
Therefore, it is terminating decimal.

```
    3.125
4 | 12.5
    12
    5
    4
    10
    8
    20
    20
    0
```

(vi) 23 ÷ 0.7
Multiplying by 10 we get
230 ÷ 7 = 32.8571428
Therefore, it is non-terminating decimal.

```
   32.85714
7 | 230
    21
    ---
    20
    14
    ---
    60
    56
    ---
    40
    35
    ---
    50
    49
    ---
    10
     7
    ---
    30
    28
    ---
    20
    14
    ---
    60
    56
    ---
     4
```

(vii) 42 ÷ 9
We know that
42 ÷ 9 = 4.666
Therefore, it is non-terminating decimal.

```
   4.666
9 | 42
    36
    ---
    60
    54
    ---
    60
    54
    ---
    60
    54
    ---
     6
```

(viii) 0.56 ÷ 0.11
Multiplying by 100
56 ÷ 11 = 5.0909
Therefore, it is non-terminating decimal.

5.0909
11 | 56
55
100
99
100
99
1

2. Express as recurring decimals:
(i) 1 1/3
(ii) 10/11
(iii) 5/6
(iv) 2/13
(v) 1/9
(vi) 17/90
(vii) 5/18
(viii) 7/12
Solution:

(i) 1 1/3
It can be written as
1 1/3 = 4/3 $= 1.\bar{3}$

1.333
3 | 4
3
10
9
10
9
10
9
1

(ii) 10/11
It can be written as
10/11 = 0.909090… $= 0.\overline{90}$

```
    0.90909
11 | 10
     99
     100
     99
     100
     99
     100
     99
     1
```

(iii) 5/6

It can be written as

5/6 = 0.8333…. $= 0.\overline{83}$

```
    0.8333
6 | 5
    48
    20
    18
    20
    18
    20
    18
    2
```

(iv) 2/13

It can be written as

2/13 = 0.153846153846 $= 0.\overline{153846}$

```
      0.153846
13 ) 2
     13
     ---
     70
     65
     ---
     50
     39
     ---
     110
     104
     ---
     60
     52
     ---
     80
     78
     ---
     20
     13
     ---
     70
     65
     ---
     50
     39
     ---
     110
     104
     ---
     60
     52
     ---
     80
     78
     ---
     2
```

(v) 1/9

It can be written as

1/9 = 0.1111 …. $= 0.\overline{1}$

```
     0.1111
9 ) 1
    9
    ---
    10
    9
    ---
    10
    9
    ---
    10
    9
    ---
    1
```

(vi) 17/90

It can be written as

17/90 = 0.1888 $= 0.\overline{18}$

```
      0.1888
90 ) 17
     90
     800
     720
     800
     720
     800
     720
     80
```

(vii) 5/18
It can be written as
5/18 = 0.2777 … $= 0.\overline{27}$

```
      0.2777
18 ) 5
     36
     140
     126
     140
     126
     14
```

(viii) 7/12
It can be written as
7/12 = 0.58333….

```
      0.58333
12 ) 7
     60
     100
     96
     40
     36
     40
     36
     40
     36
     4
```

3. Convert into vulgar fraction:

$(i) 0.\overline{3}$
$(ii) 0.\overline{8}$
$(iii) 4.\overline{4}$
$(iv) 23.\overline{7}$

Solution:

$(i) 0.\overline{3}$
It can be written as
= 3/9
So we get
= (3 – 0)/ 9
= 3/9
= 1/3

$(ii) 0.\overline{8}$
It can be written as
= 8/9
So we get
= (8 – 0)/ 9
= 8/9

$(iii) 4.\overline{4}$
It can be written as
= 44/9
So we get
= (44 – 4)/ 9
= 40/9
= 4 4/9

$(iv) 23.\overline{7}$
It can be written as
= 237/9
So we get
= (237 – 23)/ 9
= 214/9
= 23 7/9

4. Convert into vulgar fraction:
$(i) 0.\overline{35}$
$(ii) 2.\overline{23}$
$(iii) 1.\overline{28}$
$(iv) 5.\overline{234}$
Solution:

$(i) 0.\overline{35}$
It can be written as
= 35/99
So we get
= (35 – 0)/ 99
= 35/99

$(ii) 2.\overline{23}$

It can be written as
$= 2 + 0.\overline{23}$
So we get
= 2 + (23 – 0)/ 99
On further calculation
= 2 + 23/99
= 2 33/99

$(iii) 1.\overline{28}$
It can be written as
$= 1 + 0.\overline{28}$
So we get
= 1 + (28 – 0)/ 99
On further calculation
= 1 + 28/99
= 1 28/99

$(iv) 5.\overline{234}$
It can be written as
$= 5 + 0.\overline{234}$
So we get
= 5 + (234 – 0)/ 999
On further calculation
= 5 234/999

5. Convert into vulgar fraction:
$(i) 0.3\overline{7}$
$(ii) 0.2\overline{45}$
$(iii) 0.68\overline{5}$
$(iv) 0.4\overline{42}$
Solution:

$(i) 0.3\overline{7}$
It can be written as
= (37 – 3)/ 90
So we get
= 34/90
= 17/45

$(ii) 0.2\overline{45}$
It can be written as
= (245 – 2)/ 990
So we get
= 243/990
On further calculation
= 81/330
= 27/110

$(iii) 0.68\overline{5}$

It can be written as

= (685 – 68)/ 900

So we get

= 617/ 900

$(iv) 0.4\overline{42}$

It can be written as

= (442 – 4)/ 990

So we get

= 438/ 990

= 219/ 495