(v) $\dfrac{2}{11}$

On dividing 2 by 11, we get

```
         0.1818....
  11)          2
            −0
              20
            −11
              90
            −88
              20
            −11
              90
            −88
               2
```

We can observe that while dividing 2 by 11, first we got the remainder as 2 and then 9, which will continue to be 2 and 9 alternately.

Therefore, we conclude that

$\dfrac{2}{11} = 0.1818.....$ or $\dfrac{2}{11} = 0.\overline{18}$, which is a non-terminating decimal and recurring decimal.

(vi) $\dfrac{329}{400}$

On dividing 329 by 400, we get

```
          0.8225
    400)    329
          −0
         3290
         −3200
           900
          −800
          1000
          −800
          2000
         −2000
             0
```

We can observe that while dividing 329 by 400, we got the remainder as 0.

Therefore, we conclude that $\dfrac{329}{400} = 0.8225$, which is a terminating decimal.

Q2. You know that $\dfrac{1}{7} = 0.142857\ldots$. Can you

predict what the decimal expansions of $\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}, \frac{6}{7}$ are, without actually doing the long division? If so, how?

[Hint: Study the remainders while finding the value of $\frac{1}{7}$ carefully.]

Ans: We are given that

$\frac{1}{7} = 0.\overline{142857}$ or $\frac{1}{7} = 0.142857\ldots$.

We need to find the values of $\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}$ and $\frac{6}{7}$, without performing long division.

We know that, $\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}$ and $\frac{6}{7}$ can be rewritten

as $2 \times \frac{1}{7}, 3 \times \frac{1}{7}, 4 \times \frac{1}{7}, 5 \times \frac{1}{7}$ and $6 \times \frac{1}{7}$.

On substituting value of $\frac{1}{7}$ as $0.142857\ldots$, we get

$2 \times \frac{1}{7} = 2 \times 0.142857\ldots = 0.285714\ldots$

$$3 \times \frac{1}{7} = 3 \times 0.142857.... = 0.428571$$

$$4 \times \frac{1}{7} = 4 \times 0.142857... = 0.571428$$

$$5 \times \frac{1}{7} = 5 \times 0.142857..... = 0.714285$$

$$6 \times \frac{1}{7} = 6 \times 0.142857..... = 0.857142$$

Therefore, we conclude that, we can predict the values of $\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}$ and $\frac{6}{7}$, without performing long division, to get

$$\frac{2}{7} = 0.\overline{285714}, \frac{3}{7} = 0.\overline{428571}, \frac{4}{7} = 0.\overline{571428}, \frac{5}{7}$$

$$= 0.\overline{714285}, \text{ and} \frac{6}{7} = 0.\overline{857142}$$

Q3. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

(i) $0.\overline{6}$

(ii) $0.4\overline{7}$

(iii) $0.\overline{001}$

Ans: (i) Let $x = 0.\overline{6}$

$\Rightarrow x = 0.6666.........(a)$

We need to multiply both sides by 10 to get

$10x = 6.6666.....$ ....(b)

We need to subtract (a)from (b), to get

$$10x = 6.6666.....$$
$$- x = 0.6666.....$$
$$\overline{9x = 6}$$

We can also write $9x = 6$ as $x = \dfrac{6}{9}$ or $x = \dfrac{2}{3}$.

Therefore, on converting $0.\overline{6}$ in the $\dfrac{p}{q}$ form, we

get the answer as $\dfrac{2}{3}$.

(ii) Let $x = 0.4\overline{7} \Rightarrow x = 0.47777........(a)$

We need to multiply both sides by 10 to get

$10x = 4.7777.....(b)$

We need to subtract (a)from (b), to get

********** END *********