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## Exercise 1B

### Answer.1.

- i) Denominator of  $\frac{13}{80}$  is 80  
And,  $80 = 2^4 \times 5^1$   
80 has no prime factor other than 2 and 5  
 $\therefore$  it is a terminating decimal
- ii) Denominator of  $\frac{7}{24}$  is 24  
And,  $24 = 2^3 \times 3^1$   
24 has prime factor 3 which is other than 2 and 5  
 $\therefore$  it is not a terminating decimal
- iii) Denominator of  $\frac{5}{12}$  is 12  
And,  $12 = 2^2 \times 3^1$   
12 has prime factor 3 which is other than 2 and 5  
 $\therefore$  it is not a terminating decimal
- iv) Denominator of  $\frac{31}{375}$  is 375  
And,  $375 = 5^3 \times 3^1$   
375 has prime factor 3 which is other than 2 and 5  
 $\therefore$  it is not a terminating decimal
- v) Denominator of  $\frac{16}{125}$  is 125  
And,  $125 = 5^3$   
125 has prime factor only 5 which is other than 2 and 5  
 $\therefore$  it is not a terminating decimal

### Answer2.

- i)  $\frac{5}{8} = 0.625$ ,  
It is terminating decimal because it ends after a finite number of digits.
- ii)  $\frac{7}{25} = 0.28$ ,  
It is terminating decimal because it ends after a finite number of digits.
- iii)  $\frac{3}{11} = 0.\overline{27}$ ,  
It is non terminating decimal because it doesn't end after a finite number of digits.
- iv)  $\frac{5}{13} = 0.\overline{384615}$   
It is non terminating decimal because it doesn't end after a finite number of digits.

- v)  $\frac{11}{24} = 0.45\overline{83}$   
It is non terminating decimal because it doesn't end after a finite number of digits.
- vi)  $\frac{261}{400} = 0.6525$   
It is terminating decimal because it ends after a finite number of digits.
- vii)  $\frac{231}{625} = 0.3696$   
It is terminating decimal because it ends after a finite number of digits.
- viii)  $2\frac{5}{12} = \frac{29}{12} = 2.41\overline{6}$   
It is non terminating decimal because it doesn't end after a finite number of digits.

**Answer.3.**

- i) Let  $x = 0.\overline{2}$   
Then,  $x = 0.222 \dots$  (i)  
Since repeating block has only one digit 2, we multiply its 10 which is  
 $10x = 2.222 \dots$  (ii)  
Subtract (ii) - (i)  
 $9x = 2$   
So,  $x = \frac{2}{9}$
- ii) Let  $x = 0.\overline{53}$   
Then,  $x = 0.5353 \dots$  (i)  
Since repeating block has only two digits, we multiply its 100 which is  
 $100x = 59.5353 \dots$  (ii)  
Subtract (ii) - (i)  
 $99x = 53$   
So,  $x = \frac{53}{99}$
- iii) Let  $x = 2.\overline{93}$   
Then,  $x = 2.9393 \dots$  (i)  
Since repeating block has only 2digit , we multiply its 100 which is  
 $100x = 293.9393 \dots$  (ii)  
Subtract (ii) - (i)  
 $99x = 291$   
So,  $x = \frac{291}{99}$  or  $\frac{97}{33}$
- iv) Let  $x = 18.\overline{48}$   
Then,  $x = 18.4848 \dots$  (i)  
Since repeating block has only digit 2, we multiply its 100 which is  
 $100x = 1848.4848 \dots$  (ii)  
Subtract (ii) - (i)  
 $99x = 1830$   
So,  $x = \frac{1830}{99}$  or  $\frac{610}{33}$

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- v) Let  $x = 0.\overline{235}$   
 Then,  $x = 0.235235 \dots$  (i)  
 Since repeating block has only 3 digits, we multiply its 1000 which is  
 $1000x = 235.235235 \dots$  (ii)  
 Subtract (ii) - (i)  
 $999x = 235$   
 So,  $x = \frac{235}{999}$
- vi) Let  $x = 0.00\overline{32}$   
 Then,  $x = 0.003232 \dots$  (i)  
 Since repeating block has only 2 digits, we multiply its 100 which is  
 $10000x = 32.3232 \dots$  (ii)  
 Subtract (ii) - (i)  
 $9999x = 32.32$   
 So,  $x = \frac{32.32}{9999} = \frac{3232}{999900} = \frac{8}{2475}$
- vii) Let  $x = 1.\overline{323}$   
 Then,  $x = 1.32323 \dots$  (i)  
 Since repeating block has only 2 digit , we multiply its 100 which is  
 $100x = 132.32323 \dots$  (ii)  
 Subtract (ii) - (i)  
 $99x = 131$   
 So,  $x = \frac{131}{99}$
- viii) Let  $x = 0.3\overline{178}$   
 Then,  $x = 0.3178178 \dots$  (i)  
 Since repeating block has only 3digit , we multiply its 100 which is  
 $1000x = 317.8178 \dots$  (ii)  
 Subtract (ii) - (i)  
 $999x = 317.5$   
 So,  $x = \frac{317.5}{9990} = \frac{3175}{9990} = \frac{635}{1998}$
- ix) Let  $x = 32.\overline{1235}$   
 Then,  $x = 32.1235 \dots$  (i)  
 Since repeating block has only 2digit, we multiply its 100 which is  
 $100x = 3212.3535 \dots$  (ii)  
 Subtract (ii) - (i)  
 $99x = 3180.23$   
 So,  $x = \frac{3180.23}{99} \text{ or } \frac{318023}{9900}$
- x) Let  $x = 0.4\overline{07}$   
 Then,  $x = 0.407 \dots$  (i)  
 Since repeating block has only one digit , we multiply its 10 which is  
 $10x = 4.077 \dots$  (ii)

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Subtract (ii) - (i)

$$9x = 3.67$$

$$\text{So, } x = \frac{3.67}{9} \text{ or } \frac{367}{900}$$

**Answer4.**

$$\text{Let } x = 2.\overline{36}$$

$$\text{Then, } x = 2.3636 \dots \text{ (i)}$$

Since repeating block has only 2 digits, we multiply its 100 which is

$$100x = 236.3636 \dots \text{ (ii)}$$

Subtract (ii) - (i)

$$99x = 234$$

$$\text{So, } x = \frac{234}{99}$$

$$\text{Let } y = 0.\overline{23}$$

$$\text{Then, } y = 0.2323 \dots \text{ (i)}$$

Since repeating block has only 2 digits, we multiply its 100 which is

$$100y = 23.2323 \dots \text{ (ii)}$$

Subtract (ii) - (i)

$$99y = 23$$

$$\text{So, } y = \frac{23}{99}$$

$$x + y = \frac{234}{99} + \frac{23}{99} = \frac{257}{99}$$

**Answer.5.**

$$\text{Let } x = 0.\overline{38}$$

$$\text{Then, } x = 0.3838 \dots \text{ (i)}$$

Since repeating block has only 2 digits, we multiply its 100 which is

$$100x = 38.3838 \dots \text{ (ii)}$$

Subtract (ii) - (i)

$$99x = 38$$

$$\text{So, } x = \frac{38}{99}$$

$$\text{Let } y = 1.\overline{27}$$

$$\text{Then, } y = 1.2727 \dots \text{ (i)}$$

Since repeating block has only 2 digits, we multiply its 100 which is

$$100x = 127.2727 \dots \text{ (ii)}$$

Subtract (ii) - (i)

$$99x = 126$$

$$\text{So, } x = \frac{126}{99}$$

$$\frac{38}{99} + \frac{126}{99} = \frac{164}{99} \text{ which is in form } \frac{p}{q}$$