**NCERT solutions for class 10 maths chapter 1 Real Numbers Excercise: 1.1**

**Q1 (1)**[Use Euclid’s division algorithm to find the HCF of 135 and 225](https://learn.careers360.com/ncert/question-use-euclids-division-algorithm-to-find-the-hcf-of-135-and-225/)

**Answer:**

225 > 135. Applying Euclid's Division algorithm we get

225=135\times 1+90

since remainder \neq 0 we again apply the algorithm

135=90\times 1+45

since remainder \neq 0 we again apply the algorithm

90=45\times 2

since remainder = 0 we conclude the HCF of 135 and 225 is 45.

**Q1 (2)**[Use Euclid’s division algorithm to find the HCF of  196 and 38220](https://learn.careers360.com/ncert/question-use-euclids-division-algorithm-to-find-the-hcf-of-196-and-38220/)

**Answer:**

38220 > 196. Applying Euclid's Division algorithm we get

38220=196\times 195+0

since remainder = 0 we conclude the HCF of  38220 and 196 is 196.

**Q1 (3)**[Use Euclid’s division algorithm to find the HCF of 867 and 255](https://learn.careers360.com/ncert/question-use-euclids-division-algorithm-to-find-the-hcf-of-867-and-255/)

**Answer:**

867 > 225. Applying Euclid's Division algorithm we get

867=255\times 3+102

since remainder \neq 0 we apply the algorithm again.

since 255 > 102

255=102\times 2+51

since remainder \neq 0 we apply the algorithm again.

since 102 > 51

102=51\times 2+0

since remainder = 0 we conclude the HCF of  867 and 255 is 51.

**Q2**[Show that any positive odd integer is of the form 6q + 1, or 6q + 3, or 6q + 5, where q is some integer.](https://learn.careers360.com/ncert/question-show-that-any-positive-odd-integer-is-of-the-form-6q-plus-1-or-6q-plus-3-or-6q-plus-5-where-q-is-some-integer/)

**Answer:**

Let p be any positive integer. It can be expressed as

p = 6q + r

where q\geq 0 and 0\leq r< 6

but for r = 0, 2 or 4 p will be an even number therefore all odd positive integers can be written in the form 6q + 1, 6q + 3 or 6q + 5.

**Q3**[An army contingent of 616 members is to march behind an army band of 32 members in a parade. The two groups are to march in the same number of columns. What is the maximum number of columns in which they can march?](https://learn.careers360.com/ncert/question-an-army-contingent-of-616-members-is-to-march-behind-an-army-band-of-32-members-in-a-parade-the-two-groups-are-to-march-in-the-same-number-of-columns-what-is-the-maximum-number-of-columns-in-which-they-can-march-2/)

**Answer:**

The maximum number of columns in which they can march = HCF (32, 616)

Since 616 > 32, applying Euclid's Division Algorithm we have

616=32\times 19+8

Since remainder \neq 0 we again apply Euclid's Division Algorithm

Since 32 > 8

32=8\times 4+0

Since remainder  = 0 we conclude, 8 is the HCF of  616 and  32.

 The maximum number of columns in which they can march is 8.

**Q4**[Use Euclid’s division lemma to show that the square of any positive integer is either of the form 3m or 3m + 1 for some integer m.](https://learn.careers360.com/ncert/question-use-euclids-division-lemma-to-show-that-the-square-of-any-positive-integer-is-either-of-the-form-3m-or-3m-plus-1-for-some-integer-m/)

[[Hint : Let x be any positive integer then it is of the form 3q, 3q + 1 or 3q + 2. Now square each of these and show that they can be rewritten in the form 3m or 3m + 1]](https://learn.careers360.com/ncert/question-use-euclids-division-lemma-to-show-that-the-square-of-any-positive-integer-is-either-of-the-form-3m-or-3m-plus-1-for-some-integer-m/)

**Answer:**

Let x be any positive integer.

It can be written in the form 3q + r where q\geq 0 and r = 0, 1 or 2

Case 1:

For r = 0 we have

x2 = (3q)2

x2 = 9q2

x2 = 3(3q2)

x2 = 3m

Case 2:

For r = 1 we have

x2 = (3q+1)2

x2 = 9q2 + 6q +1

x2 = 3(3q2 + 2q) + 1

x2 = 3m + 1

Case 3:

For r = 2 we have

x2 = (3q+2)2

x2 = 9q2 + 12q +4

x2 = 3(3q2 + 4q + 1) + 1

x2 = 3m + 1

Hence proved.

**Q5**[Use Euclid’s division lemma to show that the cube of any positive integer is of the form 9m, 9m + 1 or 9m + 8.](https://learn.careers360.com/ncert/question-use-euclids-division-lemma-to-show-that-the-cube-of-any-positive-integer-is-of-the-form-9m-9m-plus-1-or-9m-plus-8/)

**Answer:**

Let x be any positive integer.

It can be written in the form 3q + r where q\geq 0 and r = 0, 1 or 2

Case 1:

For r = 0 we have

x3 = (3q)3

x3 = 27q3

x3 = 9(3q3)

x3 = 9m

Case 2:

For r = 1 we have

x3 = (3q+1)3

x3 = 27q3 + 27q2 + 9q + 1

x3 = 9(3q3 + 3q2 +q) + 1

x3 = 3m + 1

Case 3:

For r = 2 we have

x3 = (3q+2)3

x3 = 27q3 + 54q2 + 36q + 8

x3 = 9(3q3 + 6q2 +4q) + 8

x3 = 3m + 8

Hence proved.

**NCERT solutions for class 10 maths chapter 1 Real Numbers Excercise: 1.2**

**Q1 (1)**[Express each number as a product of its prime factors:  140](https://learn.careers360.com/ncert/question-express-each-number-as-a-product-of-its-prime-factors-140/)

**Answer:**

The number can be as a product of its prime factors as follows

\\140=2\times 2\times 5\times 7\\ 140=2^{2}\times 5\times 7

**Q 1 (2)**[Express each number as a product of its prime factors:  156](https://learn.careers360.com/ncert/question-express-each-number-as-a-product-of-its-prime-factors-156/)

**Answer:**

The given number can be expressed as follows

\\156=2\times 2\times 3\times 13\\ 156=2^{2}\times 3\times 13

**Q1 (3)**[Express each number as a product of its prime factors:  3825](https://learn.careers360.com/ncert/question-express-each-number-as-a-product-of-its-prime-factors-3825/)

**Answer:**

The number is expressed as the product of the prime factors as follows

\\3825=3\times 3\times 5\times 5\times 17\\ 3825=3^{2}\times 5^{2}\times 17

**Q1 (4)**[Express each number as a product of its prime factors:  5005](https://learn.careers360.com/ncert/question-express-each-number-as-a-product-of-its-prime-factors-5005/)

**Answer:**

The given number can be expressed as the product of its prime factors as follows.

5005=5\times 7\times 11\times 13

**Q1 (5)**[Express each number as a product of its prime factors:  7429](https://learn.careers360.com/ncert/question-express-each-number-as-a-product-of-its-prime-factors-7429/)

**Answer:**

The given number can be expressed as the product of their prime factors as follows

7429=17\times 19\times 23

**Q2 (1)**[Find the LCM and HCF of the following pairs of integers and verify that LCM [\times](https://learn.careers360.com/ncert/question-find-the-lcm-and-hcf-of-the-following-pairs-of-integers-and-verify-that-lcm-into-hcf-equals-product-of-the-two-numbers-26-and-91/) HCF = product of the two numbers: 26 and 91](https://learn.careers360.com/ncert/question-find-the-lcm-and-hcf-of-the-following-pairs-of-integers-and-verify-that-lcm-into-hcf-equals-product-of-the-two-numbers-26-and-91/)

**Answer:**

26 = 2 x 13

91 = 7 x 13

HCF(26,91) = 13

LCM(26,91) = 2 x 7 x 13 = 182

HCF x LCM = 13 x 182 = 2366

26 x 91 = 2366

26 x 91 = HCF x LCM

Hence Verified

**Q2 (2)**[Find the LCM and HCF of the following pairs of integers and verify that LCM × HCF = product of the two numbers. 510 and 92](https://learn.careers360.com/ncert/question-find-the-lcm-and-hcf-of-the-following-pairs-of-integers-and-verify-that-lcm-into-hcf-equals-product-of-the-two-numbers-510-and-92/)

**Answer:**

The number can be expressed as the product of prime factors as

510 = 2 x 3 x 5 x 17

92 = 22x 23

HCF(510,92) = 2

LCM(510,92) = 22 x 3 x 5 x 17 x 23 = 23460

HCF x LCM = 2 x 23460 = 46920

510 x 92 = 46920

510 x 92 = HCF x LCM

Hence Verified

**Q2 (3)**[Find the LCM and HCF of the following pairs of integers and verify that LCM × HCF = product of the two numbers. 336 and 54](https://learn.careers360.com/ncert/question-find-the-lcm-and-hcf-of-the-following-pairs-of-integers-and-verify-that-lcm-into-hcf-equals-product-of-the-two-numbers-336-and-54/)

**Answer:**

336 is expressed as the product of its prime factor as

336 = 24 x 3 x 7

54 is expressed as the product of its prime factor as

54 = 2 x 33

HCF(336,54) = 2 x 3 = 6

LCM(336,54) = 24 x 33x 7 = 3024

HCF x LCM = 6 x 3024 = 18144

336 x 54 = 18144

336 x 54 = HCF x LCM

Hence Verified

**Q3 (1)**[Find the LCM and HCF of the following integers by applying the prime factorization method.  12, 15 and 21](https://learn.careers360.com/ncert/question-find-the-lcm-and-hcf-of-the-following-integers-by-applying-the-prime-factorisation-method-12-15-and-21/)

**Answer:**

The numbers can be written as the product of their prime factors as follows

12 = 22 x 3

15 = 3 x 5

21 = 3 x 7

HCF = 3

LCM = 22 x 3 x 5 x 7 = 420

**Q3 (2)**[Find the LCM and HCF of the following integers by applying the prime factorisation method.  17, 23 and 29](https://learn.careers360.com/ncert/question-find-the-lcm-and-hcf-of-the-following-integers-by-applying-the-prime-factorisation-method-17-23-and-29/)

**Answer:**

The given numbers are written as the product of their prime factors as follows

17 = 1 x 17

23 = 1 x 23

29 = 1 x 29

HCF = 1

LCM = 17 x 23 x 29 = 11339

**Q3 (3)**[Find the LCM and HCF of the following integers by applying the prime factorization method.  8, 9 and 25](https://learn.careers360.com/ncert/question-find-the-lcm-and-hcf-of-the-following-integers-by-applying-the-prime-factorisation-method-8-9-and-25/)

**Answer:**

The given numbers are written as the product of their prime factors as follows

8 = 23

9 = 32

25 = 52

HCF = 1

LCM = 23 x 32 x 52 = 1800

**Q4**[Given that HCF (306, 657) = 9, find LCM (306, 657).](https://learn.careers360.com/ncert/question-given-that-hcf-306-657-9-find-lcm-306-657/)

**Answer:**

As we know the product of HCF and LCM of two numbers is equal to the product of the two numbers we have

HCF (306, 657) x LCM (306, 657) = 306 x 657

**Q5**[Check whether [6 ^n](https://learn.careers360.com/ncert/question-check-whether-6-raised-to-n-can-end-with-the-digit-0-for-any-natural-number-n/)  can end with the digit 0 for any natural number n.](https://learn.careers360.com/ncert/question-check-whether-6-raised-to-n-can-end-with-the-digit-0-for-any-natural-number-n/)

**Answer:**

By prime factorizing we have

6n = 2n x 3n

A number will end with 0 if it has at least 1 as the power of both 2 and 5 in its prime factorization. Since the power of 5 is 0 in the prime factorization of 6n we can conclude that for no value of n 6n will end with the digit 0.

**Q6**[Explain why 7 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/) 11 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/) 13 + 13 and 7 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/)  6 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/)  5 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/) 4 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/) 3 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/) 2 [\times](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/) 1 + 5 are composite numbers.](https://learn.careers360.com/ncert/question-explain-why-7-into-11-into-13-plus-13-and-7-into-6-into-5-into-4-into-3-into-2-into-1-plus-5-are-composite-numbers/)

Answer:

7 x 11 x 13 + 13

= (7 x 11 + 1) x 13

= 78 x 13

= 2 x 3 x 132

7 x 6 x 5 x 4 x 3 x 2 x 1 + 5

= (7 x 6 x 4 x 3 x 2 x 1 + 1) x 5

= 5 x 1008

After Solving we observed that both the number are even numbers and the number rule says that we can take atleast two common out of two numbers. So that the number is composite number.

**Q7**[There is a circular path around a sports field. Sonia takes 18 minutes to drive one round of the field, while Ravi takes 12 minutes for the same. Suppose they both start at the same point and at the same time and go in the same direction. After how many minutes will they meet again at the starting point?](https://learn.careers360.com/ncert/question-there-is-a-circular-path-around-a-sports-field-sonia-takes-18-minutes-to-drive-one-round-of-the-field-while-ravi-takes-12-minutes-for-the-same-suppose-they-both-start-at-the-same-point-and-at-the-same-time-and-go-in-the-same-direction-after-how-many/)

**Answer:**

The time after which they meet again at the starting point will be equal to the LCM of the times they individually take to complete one round.

Time taken by Sonia = 18 = 2 x 32

Time taken by Ravi = 12 = 22 x 3

LCM(18,12) = 22 x 32 = 36

Therefore they would again meet at the starting point after 36 minutes.

**NCERT solutions for class 10 maths chapter 1 Real Numbers Excercise: 1.3**

**Q1**[Prove that [\sqrt 5](https://learn.careers360.com/ncert/question-prove-that-square-root-5-is-irrational/)  is irrational.](https://learn.careers360.com/ncert/question-prove-that-square-root-5-is-irrational/)

**Answer:**

Let us assume \sqrt{5} is rational.

It means \sqrt{5} can be written in the form \frac{p}{q} where p and q are co-primes and q\neq 0

\\\sqrt{5}=\frac{p}{q}

Squaring both sides we obtain

From the above equation, we can see that p2 is divisible by 5, Therefore p will also be divisible by 5 as 5 is a prime number. (i)

Therefore p can be written as 5r

p = 5r

p2 = (5r)2

5q2 = 25r2

q2 = 5r2

From the above equation, we can see that q2 is divisible by 5, Therefore q will also be divisible by 5 as 5 is a prime number. (ii)

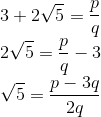
From (i) and  (ii) we can see that both p and q are divisible by 5. This implies that p and q are not co-primes. This contradiction arises because our initial assumption that \sqrt{5}  is rational was wrong. Hence proved that \sqrt{5}  is irrational.

**Q2**[Prove that [3 + 2 \sqrt 5](https://learn.careers360.com/ncert/question-prove-that-3-plus-2-root-5-is-irrational/)  is irrational.](https://learn.careers360.com/ncert/question-prove-that-3-plus-2-root-5-is-irrational/)

**Answer:**

Let us assume 3 + 2 \sqrt 5 is rational.

This means 3 + 2 \sqrt 5 can be wriiten in the form \frac{p}{q} where p and q are co-prime integers.



As p and q are integers \frac{p-3q}{2q}\\ would be rational, this contradicts the fact that \sqrt{5} is irrational. This contradiction arises because our initial assumption that 3 + 2 \sqrt 5 is rational was wrong. Therefore 3 + 2 \sqrt 5 is irrational.

**Q3**  [Prove that the following are irrationals :](https://learn.careers360.com/ncert/question-prove-that-the-following-are-irrationals-1-by-root-2/)

[(i) 1/ \sqrt 2](http://learn.careers360.com/ncert/question-prove-that-the-following-are-irrationals-1-by-root-2/)

**Answer:**

Let us assume \frac{1}{\sqrt{2}} is rational.

This means \frac{1}{\sqrt{2}} can be written in the form \frac{p}{q} where p and q are co-prime integers.

\\\frac{1}{\sqrt{2}}=\frac{p}{q}\\ \sqrt{2}=\frac{q}{p}

Since p and q are co-prime integers \frac{q}{p} will be rational, this contradicts the fact that  \sqrt{2} is irrational. This contradiction arises because our initial assumption that \frac{1}{\sqrt{2}}  is rational was wrong. Therefore \frac{1}{\sqrt{2}} is irrational.

**Q3 (2)**[Prove that the following are irrationals :](https://learn.careers360.com/ncert/question-prove-that-the-following-are-irrationals-7-root-5/)

[(ii) 7 \sqrt 5](http://learn.careers360.com/ncert/question-prove-that-the-following-are-irrationals-7-root-5/)

**Answer:**

Let us assume 7 \sqrt 5 is rational.

This means 7 \sqrt 5 can be written in the form \frac{p}{q} where p and q are co-prime integers.



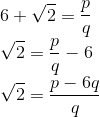
As p and q are integers \frac{p}{7q}\\ would be rational, this contradicts the fact that \sqrt{5} is irrational. This contradiction arises because our initial assumption that 7 \sqrt 5 is rational was wrong. Therefore 7 \sqrt 5 is irrational.

**Q3 (3)**[Prove that the following are irrationals :  [6 + \sqrt 2](https://learn.careers360.com/ncert/question-prove-that-the-following-are-irrationals-6-plus-root-2/)](https://learn.careers360.com/ncert/question-prove-that-the-following-are-irrationals-6-plus-root-2/)

**Answer:**

Let us assume 6 + \sqrt 2 is rational.

This means 6 + \sqrt 2 can be written in the form \frac{p}{q} where p and q are co-prime integers.



As p and q are integers \frac{p-6q}{q} would be rational, this contradicts the fact that \sqrt{2} is irrational. This contradiction arises because our initial assumption that 6 + \sqrt 2 is rational was wrong. Therefore 6 + \sqrt 2 is irrational.

**NCERT solutions for class 10 maths chapter 1 Real Numbers Excercise: 1.4**

**Q1 (1)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion:13/3125](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-13-by-3125/)

**Answer:**

\frac{13}{3125}=\frac{13}{5^{5}}

The denominator is of the form 2a x 5b where a = 0 and b = 5. Therefore the given rational number will have a terminating decimal expansion.

**Q1 (2)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion:17 / 8](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-17-by-8/)

**Answer:**

\frac{17}{8}=\frac{17}{2^{3}}

The denominator is of the form 2a x 5b where a = 3 and b = 0. Therefore the given rational number will have a terminating decimal expansion.

**Q1 (3)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion:  64 / 455](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-64-by-455/)

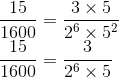
**Answer:**

\frac{64}{455}=\frac{64}{5\times 7\times 13}

The denominator is not of the form 2a x 5b. Therefore the given rational number will have a non-terminating repeating decimal expansion.

**Q 1 (4)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion: 15 / 1600](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-15-by-1600/)

**Answer:**



The denominator is of the form 2a x 5b where a = 6 and b = 1. Therefore the given rational number will have a terminating decimal expansion.

**Q 1 (5)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion: 29 / 343](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-29-by-343/)

**Answer:**

\frac{29}{343}=\frac{29}{7^{3}}

The denominator is not of the form 2a x 5b. Therefore the given rational number will have a non-terminating repeating decimal expansion.

**Q1 (6)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion:  [\frac{23}{2 ^3 5 ^ 2 }](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-23-by-2-cube-5-square/)](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-23-by-2-cube-5-square/)

**Answer:**

\frac{23}{2 ^3 \times 5 ^ 2 }

The denominator is of the form 2a x 5b where a = 3 and b = 2. Therefore the given rational number will have a terminating decimal expansion.

**Q1 (7)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion: [\frac{129 }{2 ^ 2 7^5 5 ^ 7 }](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-129-by-2-square-5-raised-to-7-7-raised-to-5/)](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-129-by-2-square-5-raised-to-7-7-raised-to-5/)

**Answer:**

\frac{129 }{2 ^ 2\times 7^5 \times 5 ^ 7 }

The denominator is not of the form 2a x 5b. Therefore the given rational number will have a non-terminating repeating decimal expansion.

**Q1 (8)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion: 6 / 15](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-6-by-15/)

**Answer:**



The denominator is of the form 2a x 5b where a = 0 and b = 1. Therefore the given rational number will have a terminating decimal expansion.

**Q1 (9)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion: 35 / 50](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-35-by-50/)

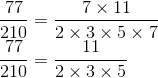
**Answer:**



The denominator is of the form 2a x 5b where a = 1 and b = 1. Therefore the given rational number will have a terminating decimal expansion.

**Q1 (10)**[Without actually performing the long division, state whether the following rational numbers will have a terminating decimal expansion or a non-terminating repeating decimal expansion:  77 / 210](https://learn.careers360.com/ncert/question-without-actually-performing-the-long-division-state-whether-the-following-rational-numbers-will-have-a-terminating-decimal-expansion-or-a-non-terminating-repeating-decimal-expansion-77-by-210/)

**Answer:**



The denominator is not of the form 2a x 5b. Therefore the given rational number will have a non-terminating repeating decimal expansion.

**Q2**[Write down the decimal expansions of those rational numbers in Question 1 above which have terminating decimal expansions.](https://learn.careers360.com/ncert/question-write-down-the-decimal-expansions-of-those-rational-numbers-in-question-1-above-which-have-terminating-decimal-expansions/)

**Answer:**

decimal expansions of  rational numbers are

(i) \frac{13}{3125}=0.00416

(ii)&nbsnbsp;\frac{17}{8}=2.125

(iv) \frac{15}{1600}=0.009375

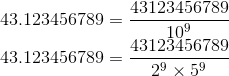
(vI) \frac{23}{2^{3}\times 5^{2}}=\frac{23}{200}=0.115

(viii) \frac{6}{15}=\frac{2}{5}=0.4

(ix) \frac{35}{50}=\frac{7}{2\times 5}=0.7

**Q3 (1)**[The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form, p / q what can you say about the prime factors of q? 43.123456789](https://learn.careers360.com/ncert/question-the-following-real-numbers-have-decimal-expansions-as-given-below-in-each-case-decide-whether-they-are-rational-or-not-if-they-are-rational-and-of-the-form-p-q-what-can-you-say-about-the-prime-factors-of-q-43123456789/)

**Answer:**



The denominator is of the form 2a x 5b where a = 9 and b = 9. Therefore the given number is rational and has a terminating decimal expansion.

**Q3 (2)**[The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form, p / q what can you say about the prime factors of q? 0.120120012000120000](https://learn.careers360.com/ncert/question-the-following-real-numbers-have-decimal-expansions-as-given-below-in-each-case-decide-whether-they-are-rational-or-not-if-they-are-rational-and-of-the-form-p-q-what-can-you-say-about-the-prime-factors-of-q-0120120012000120000/)

**Answer:**

Since the decimal part of the given number is non-terminating and non-repeating we can conclude that the given number is irrational and cannot be written in the form \frac{p}{q} where p and q are integers.

**Q3 (3)**[The following real numbers have decimal expansions as given below. In each case, decide whether they are rational or not. If they are rational, and of the form, p/q what can you say about the prime factors of q?](https://learn.careers360.com/ncert/question-the-following-real-numbers-have-decimal-expansions-as-given-below-in-each-case-decide-whether-they-are-rational-or-not-if-they-are-rational-and-of-the-form-p-q-what-can-you-say-about-the-prime-factors-of-q-43123456789-2/)

43. \overline{123456789}

**Answer:**

As the decimal part of the given number is non-terminating and repeating, the number is rational but its denominator will have factors other than 2 and 5.