Real Numbers Class 10 Important Questions

10 questions · 27 marks · no calculator · step-marked answers

Name _____ Date _____ Score / 27

- Original questions in the board paper's question types, from 1-mark MCQs to a case study. Try every question before you look at the answers.
- No calculator: as in the CBSE board exam, everything works by hand.
- Worked answers with step marks for 5 questions start after the questions. The other 5 open free on the chapter page with a free account (no card): the link is next to each one.
- Online, with more practice: cbsemathrevision.com/class-10/real-numbers

Section A · Multiple choice and assertion–reason (1 mark each)

1. **1 mark · HCF and LCM by prime factorisation**

Given that $\text{HCF}(96, 156) = 12$, the value of $\text{LCM}(96, 156)$ is

(a) 1248 (b) 1152

(c) 936 (d) 1872

2. **1 mark · Irrational numbers**

Which one of the following numbers is irrational?

(a) $\sqrt{1.44}$ (b) $(2 - \sqrt{3})^2$

(c) $(\sqrt{5} + 2)(\sqrt{5} - 2)$ (d) $\dfrac{2\sqrt{18}}{3\sqrt{2}}$

3. **1 mark · Fundamental Theorem of Arithmetic**

In the following question, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

Assertion (A): For no natural number n does 15^n end with the digit 0.

Reason (R): A natural number ends with the digit 0 only if its prime factorisation contains both 2 and 5.

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true but Reason (R) is false.

(d) Assertion (A) is false but Reason (R) is true.

Section B · Short answer (2 marks each)

4. **2 marks · HCF and LCM by prime factorisation**

Using prime factorisation, find the HCF and the LCM of 144 and 198.

5. **2 marks · Irrational numbers**

It is given that $\sqrt{5}$ is irrational. Prove that $2\sqrt{5} - 3$ is not a rational number.

Section C · Short answer (3 marks each)

6. **3 marks · Applications of HCF and LCM**

Two tankers hold 850 litres and 680 litres of milk. Find the greatest capacity of a container that can measure out the milk of each tanker an exact number of times. How many times in all is the container filled?

7. **3 marks · Applications of HCF and LCM**

What is the smallest number above 1000 that leaves no remainder when divided by 15, by 24 and by 36 ?

Section D · Long answer (5 marks each)

8. **5 marks · Applications of HCF and LCM**

A relief camp has 336 notebooks, 240 pens and 192 erasers. They are packed into identical kits, every item used, with the greatest possible number of kits. (a) How many kits are made, and what does each kit contain? (b) Delivery vans for the kits leave the camp every 20, 30 and 45 minutes on three routes. If all three leave together at 8 a.m., when do they next leave together?

9. **5 marks · Irrational numbers**

Show that $\sqrt{5}$ cannot be written as $\frac{p}{q}$, where p and q are integers and $q \neq 0$. Use this to show that $3 + \sqrt{20}$ is also irrational.

Section E · Case study (4 marks)

10. **4 marks · Applications of HCF and LCM**

Tiling a hall. A rectangular hall floor measures 1020 cm by 720 cm. It is to be covered with identical square tiles, as large as possible, with no tile cut.

i. Write 720 as a product of its prime factors. *[1 mark]*

ii. Find the side of the largest square tile that can be used. *[1 mark]*

iii. How many such tiles are needed to cover the floor? *[2 marks]*

Answers and worked solutions

Question 1

1 mark

$\text{LCM} = \dfrac{96 \times 156}{12} = 8 \times 156 = 1248$ **A1**

Correct option: (a) 1248

Question 2

1 mark

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/real-numbers#iq-2

Question 3

1 mark

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/real-numbers#iq-3

Question 4

2 marks

Answer: HCF $= 18$, LCM $= 1584$

$144 = 2^4 \times 3^2$ and $198 = 2 \times 3^2 \times 11$ **M1**

HCF $= 2 \times 3^2 = 18$; LCM $= 2^4 \times 3^2 \times 11 = 1584$ **A1**

Question 5

2 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/real-numbers#iq-5

Question 6

3 marks

Answer: 170 litres; 9 times

$850 = 2 \times 5^2 \times 17$ and $680 = 2^3 \times 5 \times 17$ **M1**

Greatest capacity $=$ HCF $= 2 \times 5 \times 17 = 170$ litres **A1**

Number of fillings $= \dfrac{850}{170} + \dfrac{680}{170} = 5 + 4 = 9$ **A1**

Question 7

3 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/real-numbers#iq-7

Question 8

5 marks

Answer: (a) 48 kits of 7 notebooks, 5 pens, 4 erasers; (b) 11 a.m.

(a) $336 = 2^4 \times 3 \times 7$, $240 = 2^4 \times 3 \times 5$, $192 = 2^6 \times 3$ **M1**

Number of kits $=$ HCF $= 2^4 \times 3 = 48$ **A1**

Each kit: $\dfrac{336}{48} = 7$ notebooks, $\dfrac{240}{48} = 5$ pens, $\dfrac{192}{48} = 4$ erasers **A1**

(b) $20 = 2^2 \times 5$, $30 = 2 \times 3 \times 5$, $45 = 3^2 \times 5$; LCM $= 2^2 \times 3^2 \times 5 = 180$ minutes **M1**

180 minutes $= 3$ hours, so they next leave together at 11 a.m. **A1**

Question 9

5 marks

Worked answer: free with a free account (no card) on the chapter page: cbsemathrevision.com/class-10/real-numbers#iq-9

Question 10

4 marks

i. $720 = 2^4 \times 3^2 \times 5$ **A1**

ii. $1020 = 2^2 \times 3 \times 5 \times 17$; HCF $= 2^2 \times 3 \times 5 = 60$ cm **A1**

iii. Along the length $\dfrac{1020}{60} = 17$ tiles; along the breadth $\dfrac{720}{60} = 12$ tiles **M1**

Number of tiles $= 17 \times 12 = 204$ **A1**

More on this chapter, free: revision notes, a Route to 95 and practice with instant feedback at cbsemathrevision.com/class-10/real-numbers

Our own original questions, written and checked by CBSE Math Revision. Independent, not affiliated with CBSE or NCERT.