

St. Andrews Scots Sr. Sec. School

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Session: 2026-27

Class: IX

Subject: Mathematics

Topic: The World Of Numbers

Worksheet - 03

Do as directed:

Q1. Evaluate: $\frac{3}{4} - [\frac{2}{3} - \frac{5}{6}]$.

Q2. If $x = -\frac{3}{4}$ and $y = \frac{5}{6}$, find $x + y$ and xy .

Q3. Represent $\frac{3}{5}$ on a number line.

Q4. Represent $-\frac{7}{4}$ on a number line.

Q5. Find three rational numbers between $\frac{2}{5}$ and $\frac{3}{5}$.

Q6. Find two rational numbers between $-\frac{1}{3}$ and $\frac{1}{6}$.

Q7. Find five rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$.

Q8. State whether each number is rational or irrational: (a) $\sqrt{49}$ (b) $\sqrt{7}$ (c) $0.121212\dots$ (d) π (e) $\sqrt{81}$.

Q9. Write any four irrational numbers between 2 and 3.

Q10. Is $\sqrt{2} + \sqrt{3}$ rational or irrational? Give a reason.

Q11. Prove that $\sqrt{2}$ is irrational.

Q12. Prove that $\sqrt{3}$ is irrational.

Q13. Prove that $\sqrt{5}$ is irrational.

Q14. Prove that $3 + \sqrt{2}$ is irrational.

Q15. Prove that $2\sqrt{3}$ is irrational.

Q16. Represent $\sqrt{2}$ on the number line using a geometrical construction.

Q17. Represent $\sqrt{5}$ on the number line.

Q18. State whether the following decimal expansions are terminating, recurring or non-terminating non-recurring: (a) 0.625 (b) 0.3333... (c) 0.101001000100001... (d) 2.75.

Q19. Express 0.6666... (0.6) as a rational number.

Q20. Express 0.272727... (0.27) as a rational number.

Q21. Without performing actual division, determine whether $\frac{13}{40}$ has a terminating or non-terminating decimal expansion.

Q22. Prove that $0.999\dots = 1$.

Q23. Write the decimal expansion of $\frac{5}{11}$. What cyclic pattern do you observe?

Answer Key

1. $11/12$

2. $x + y = 1/12$; $xy = -5/8$

8. (a) Rational (b) Irrational (c) Rational (d) Irrational (e) Rational

10. Irrational.

16. Construct a right triangle with legs 1 unit and 1 unit. Its hypotenuse is $\sqrt{2}$; transfer this length to the number line from 0.

17. Use a right-triangle construction (for example, a triangle with legs 2 and 1) to obtain $\sqrt{5}$ as the hypotenuse, then transfer it to the number line.

18. (a) Terminating (b) Recurring (c) Non-terminating non-recurring (d) Terminating.

19. $0.666... = 2/3$.

20. $0.272727... = 3/11$.

21. Terminating, because $40 = 2^3 \times 5$.

22. Let $x = 0.999...$. Then $10x = 9.999...$. Subtracting gives $9x = 9$, so $x = 1$. Therefore $0.999... = 1$.

23. $5/11 = 0.454545...$; the cyclic block 45 repeats.