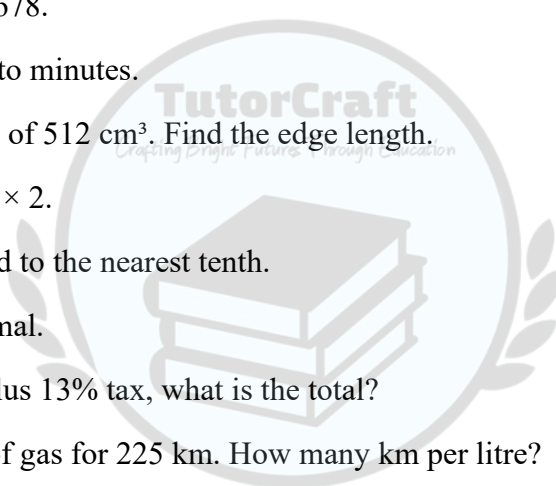


TutorCraft – IB Entrance Prep Math Mixed Review

Instructions: These practice sets are designed in the style of a textbook used for IB entrance exam preparation. Each topic includes 40 carefully sequenced questions. Show full working in your solutions, and where applicable, write answers in simplest form. Estimated time: 60–70 minutes per topic.

Part A – Number Sense (40 Questions)

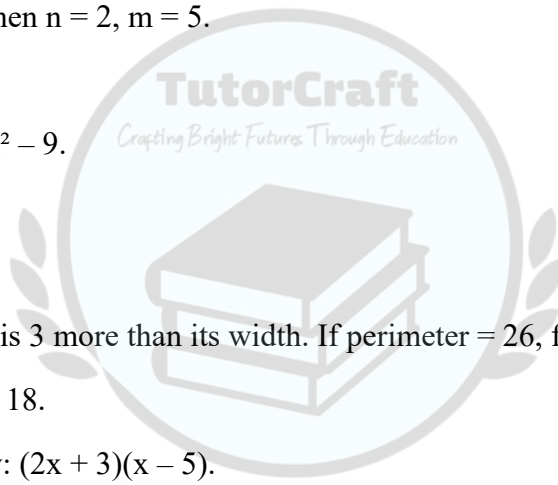
1. Write 0.375 as a fraction in lowest terms.
2. Express 312.5% as a decimal.
3. Find the greatest common divisor of 72 and 120.
4. A carton holds 2.4 kg of apples. If the price is \$3.75 per kg, how much change will you receive from \$20?
5. Simplify the ratio 84:126.
6. Evaluate $(-3)^2 - |-7|$.
7. Arrange in ascending order: 0.32, $\frac{3}{8}$, 31%.
8. The ratio of red to blue marbles is 5:7. If there are 84 blue marbles, how many red marbles are there?
9. Convert 4.6×10^{-3} to standard decimal form.
10. Express 0.077 as a fraction in lowest terms.
11. Which is larger: 0.28, $\frac{1}{4}$, or 0.3?
12. If $x = -2$, evaluate $3x^2 - 4x + 1$.
13. Round 37,568 to the nearest hundred.
14. Convert $\frac{5}{16}$ to a percentage.
15. Estimate the square root of 90 to the nearest tenth.
16. A 2-litre bottle of juice costs \$3.60. Find the price per 100 mL.
17. Zara has \$60. She buys 3 notebooks at \$4.75 each and a binder for \$6.20. How much money does she have left after 13% tax?
18. A cube has a surface area of 294 cm^2 . Find the length of one edge.
19. A number is increased by 15% to become 115. Find the original number.

20. A student reads 18 pages in 20 minutes. At this rate, how many pages will they read in 1 hour?
21. Convert 0.004 into scientific notation.
22. Find the least common multiple of 12 and 18.
23. Simplify the fraction $144/216$.
24. Write 6.738 to one decimal place.
25. Express 8.75 as a mixed number.
26. A school has 720 students. If 30% are in Grade 8, how many Grade 8 students are there?
27. Two numbers have a sum of 96 and a difference of 20. Find the numbers.
28. A recipe calls for $\frac{3}{4}$ cup of sugar. How much sugar is needed for $2\frac{1}{2}$ batches?
29. Estimate: $1,249 + 2,678$.
30. Convert 5.6 hours into minutes.
31. A cube has a volume of 512 cm^3 . Find the edge length.
32. Simplify: $45 \div 9 + 7 \times 2$.
33. Express 7.29 rounded to the nearest tenth.
34. Write $5/16$ as a decimal.
35. If a shirt costs \$32 plus 13% tax, what is the total?
36. A car uses 18 litres of gas for 225 km. How many km per litre?
37. Multiply: 36×25 .
38. Divide: $625 \div 25$.
39. A book costs \$12.50. What is the cost of 8 books?
40. Write 0.00047 in scientific notation.
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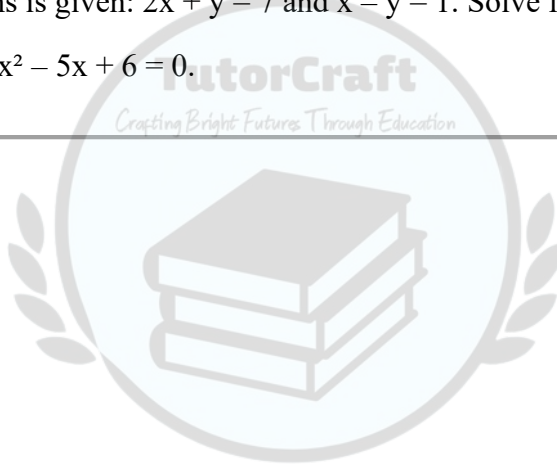
Part B – Algebraic Expressions & Equations (40 Questions)

1. Simplify: $3x + 4x - 7$.

2. Evaluate $2x^2 - 5$ when $x = 3$.
3. Expand: $2(x + 6)$.
4. Simplify: $4(2a - 3) - 5a$.
5. Solve: $x + 7 = 15$.
6. Solve: $5y - 3 = 12$.
7. If $2n + 4 = 18$, find n .
8. Translate into an expression: "three times a number decreased by five."
9. Expand: $(x + 5)(x + 3)$.
10. Factor: $x^2 + 7x + 12$.
11. Solve: $3x - 7 = 2x + 8$.
12. Evaluate $4n - 3m$ when $n = 2$, $m = 5$.
13. Solve: $2(x - 4) = 10$.
14. Factor completely: $x^2 - 9$.
15. Solve: $4x/5 = 12$.
16. Expand: $3(x - 2)$.
17. A rectangle's length is 3 more than its width. If perimeter = 26, find its dimensions.
18. Solve: $7x - 2 = 3x + 18$.
19. Expand and simplify: $(2x + 3)(x - 5)$.
20. Factor: $x^2 + 10x + 21$.
21. Solve: $9x = 54$.
22. Simplify: $2a + 3a - 4$.
23. If $4p - 7 = 13$, find p .
24. Expand: $(x + 4)^2$.
25. Solve: $2x + 5 = 11$.
26. Simplify: $6y - 2(3y - 5)$.
27. Evaluate: $5x - 2y$ when $x = 3$, $y = 4$.
28. Translate into an expression: "half of a number plus 6."



29. Solve: $12 - 4x = 0$.
30. Factor: $x^2 + 6x + 9$.
31. Simplify: $8m - (3m + 2)$.
32. Solve: $3(x + 2) = 15$.
33. Expand: $4(x - 7)$.
34. Solve: $2x/3 = 10$.
35. Factor: $x^2 - 16$.
36. Translate: "five more than twice a number."
37. Simplify: $7n - 2n + 3$.
38. Solve: $(x/2) + 4 = 10$.
39. A system of equations is given: $2x + y = 7$ and $x - y = 1$. Solve for x and y .
40. Solve the quadratic: $x^2 - 5x + 6 = 0$.

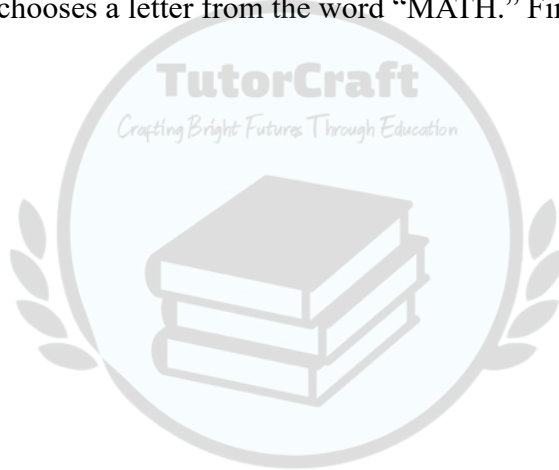


Part C – Probability & Data (40 Questions)

1. A bag has 4 red, 3 blue, 5 green marbles. Find $P(\text{blue})$.
2. A fair die is rolled. Find $P(\text{even})$.
3. A coin is flipped twice. List all outcomes.

4. A spinner has 5 equal sections labeled A, B, C, D, E. Find $P(\text{vowel})$.
5. A student picks a card numbered 1–20. Find $P(\text{prime})$.
6. If a die is rolled, what is $P(\text{number greater than 4})$?
7. A coin is tossed 3 times. How many total outcomes?
8. A box has 6 apples, 4 oranges. $P(\text{picking an orange})$?
9. Draw a tree diagram for flipping 2 coins.
10. A bag has 2 red, 2 green, 2 yellow balls. Find $P(\text{green})$.
11. A card is chosen from a 52-card deck. Find $P(\text{heart})$.
12. A spinner has 8 equal parts, 3 labeled “win.” Find $P(\text{win})$.
13. A bag has 7 black, 3 white marbles. Find $P(\text{white})$.
14. If a coin is flipped 50 times and lands heads 28 times, what is the experimental probability of heads?
15. A jar has 12 candies: 5 red, 4 blue, 3 green. Find $P(\text{not blue})$.
16. A card is drawn from 1–10. Find $P(\text{odd})$.
17. Two dice are rolled. Find $P(\text{sum} = 7)$.
18. A bag has 3 yellow, 2 red, 5 blue. Find $P(\text{red or blue})$.
19. A spinner with 6 sections numbered 1–6. Find $P(\text{multiple of 3})$.
20. Write the sample space for rolling a die and flipping a coin.
21. In a survey, 20 like soccer, 15 like basketball, 10 both. How many like only soccer?
22. Find $P(\text{drawing a king from a standard deck of 52 cards})$.
23. A jar has 10 balls, 6 red, 4 green. Find $P(\text{green})$.
24. A spinner has 4 equal parts labeled 1–4. Find $P(\text{odd})$.
25. A bag has 2 red, 3 blue. Find $P(\text{red})$.
26. Roll 2 dice. Find $P(\text{double})$.
27. A coin is flipped 5 times. How many outcomes?
28. A bag has 12 balls: 4 red, 4 blue, 4 green. Find $P(\text{not green})$.
29. A number is chosen from 1–30. Find $P(\text{divisible by 5})$.

30. A die is rolled. Find $P(\text{prime number})$.
31. A spinner has 10 equal sections, 2 yellow. Find $P(\text{yellow})$.
32. A box has 5 pens, 3 pencils. Find $P(\text{pen})$.
33. Toss 2 coins. Find $P(\text{exactly 1 head})$.
34. A class has 12 girls, 8 boys. Find $P(\text{selecting a boy})$.
35. A die is rolled. Find $P(\text{number less than 3})$.
36. A coin is flipped once. Find $P(\text{tail})$.
37. A bag has 2 red, 3 blue, 5 green. Find $P(\text{green})$.
38. A spinner has 12 equal parts, 3 shaded. Find $P(\text{shaded})$.
39. Write the sample space for rolling 2 dice. How many total outcomes?
40. A student randomly chooses a letter from the word "MATH." Find $P(\text{vowel})$.



TutorCraft – IB Entrance Prep Math Mixed Review Answer Key

This key provides solutions to all 120 questions from the three textbook-style sections: Number Sense, Algebraic Expressions & Equations, and Probability & Data.

Part A – Number Sense (40 Questions)

1. $\frac{3}{8}$
2. 3.125
3. 24
4. $\$10 - \$9 = \$11.00$ change
5. 2:3
6. $9 - 7 = 2$
7. 31%, 0.32, $\frac{3}{8}$
8. 60 red marbles
9. 0.0046
10. $\frac{77}{1000}$
11. 0.28 is smallest
12. 17
13. 37,600
14. 31.25%
15. 9.5
16. \$0.18 per 100 mL
17. \$20.17 spent \rightarrow \$39.83 remaining
18. 7 cm
19. 100
20. 54 pages
21. 4×10^{-3}
22. 36



- 23. $\frac{2}{3}$
- 24. 6.7
- 25. $8\frac{3}{4}$
- 26. 216
- 27. 58 and 38
- 28. $1\frac{7}{8}$ cups
- 29. 3,927
- 30. 336 minutes
- 31. 8 cm
- 32. 19
- 33. 7.3
- 34. 0.3125
- 35. \$36.16
- 36. 12.5 km/L
- 37. 900
- 38. 25
- 39. \$100
- 40. 4.7×10^{-4}



Part B – Algebraic Expressions & Equations (40 Questions)

- 1. $7x - 7$
- 2. 13
- 3. $2x + 12$
- 4. $3a - 12$
- 5. 8
- 6. 3
- 7. 7

8. $3n - 5$

9. $x^2 + 8x + 15$

10. $(x + 3)(x + 4)$

11. $x = 15$

12. -7

13. 9

14. $(x - 3)(x + 3)$

15. 15

16. $3x - 6$

17. Length = 8, width = 5

18. $x = 5$

19. $2x^2 - 7x - 15$

20. $(x + 3)(x + 7)$

21. 6

22. $5a - 4$

23. $p = 5$

24. $x^2 + 8x + 16$

25. 3

26. 10

27. 7

28. $\frac{1}{2}n + 6$

29. 3

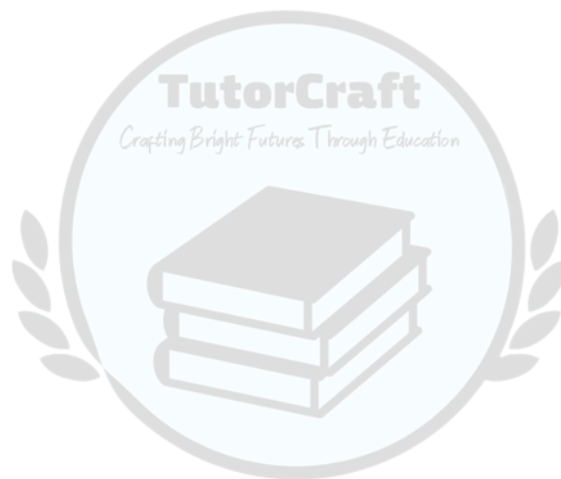
30. $(x + 3)^2$

31. $5m - 2$

32. 5

33. $4x - 28$

34. 15



35. $(x - 4)(x + 4)$

36. $2n + 5$

37. $5n + 3$

38. 12

39. $(x, y) = (8/3, 5/3)$

40. $(x - 2)(x - 3)$

Part C – Probability & Data (40 Questions)

1. $3/12 = 1/4$

2. $3/6 = 1/2$

3. $\{HH, HT, TH, TT\}$

4. $2/5$

5. $8/20 = 2/5$

6. $2/6 = 1/3$

7. 8 outcomes

8. $4/10 = 2/5$

9. Tree diagram \rightarrow 4 outcomes

10. $2/6 = 1/3$

11. $13/52 = 1/4$

12. $3/8$

13. $3/10$

14. $28/50 = 14/25$

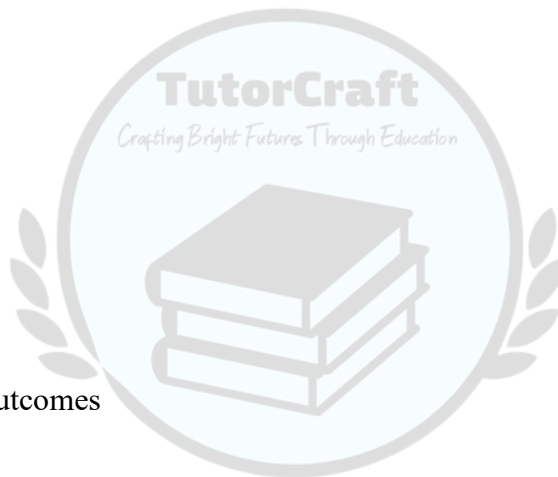
15. $7/12$

16. $5/10 = 1/2$

17. $6/36 = 1/6$

18. $8/10 = 4/5$

19. $2/6 = 1/3$



20. 12 outcomes

21. 10

22. $\frac{4}{52} = \frac{1}{13}$

23. $\frac{4}{10} = \frac{2}{5}$

24. $\frac{2}{4} = \frac{1}{2}$

25. $\frac{2}{5}$

26. $\frac{6}{36} = \frac{1}{6}$

27. 32

28. $\frac{8}{12} = \frac{2}{3}$

29. $\frac{6}{30} = \frac{1}{5}$

30. $\frac{3}{6} = \frac{1}{2}$

31. $\frac{2}{10} = \frac{1}{5}$

32. $\frac{5}{8}$

33. $\frac{2}{4} = \frac{1}{2}$

34. $\frac{8}{20} = \frac{2}{5}$

35. $\frac{2}{6} = \frac{1}{3}$

36. $\frac{1}{2}$

37. $\frac{5}{10} = \frac{1}{2}$

38. $\frac{3}{12} = \frac{1}{4}$

39. 36 outcomes

40. $\frac{1}{4}$

