

PEAK ACHIEVERS ONLINE ACADEMY | GRADE 9 MATHEMATICS
PEAK ACHIEVERS ONLINE ACADEMY
GRADE 9 MATHEMATICS
TOPICAL QUESTIONS & ANSWERS

Comprehensive Topical Practice • KJSEA-Style Questions • Worked Solutions

BOOK 2 • FIRST EDITION 2026

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Learn • Revise • Excel

FREE SAMPLE - NOT FOR RESALE

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How This Book Works

This companion practice book is designed to follow the same 19-topic sequence as the Peak Achievers Grade 9 Mathematics Revision Book. Each chapter moves from essential skills to standard practice, application and KJSEA-style reasoning, then finishes with a challenge section.

Section A — Foundation Skills

Build accuracy and fluency with essential concepts.

Section B — Standard Practice

Apply the topic through increasingly demanding calculations.

Section C — Application & KJSEA-Style

Use Mathematics in structured, contextual and reasoning problems.

Section D — Challenge Corner

Stretch understanding through multi-step and non-routine questions.

Quick Answer Key

Check final answers efficiently.

Worked Solutions

Study methods, reasoning and presentation for questions where method matters.

CHAPTER 1: INTEGERS

40 Questions • Progressive Practice • Answers & Worked Solutions

Skills Covered

Ordering and comparing integers; number lines; absolute value; addition and subtraction; multiplication and division; brackets and order of operations; temperatures; elevations; financial contexts; and multi-step reasoning.

SECTION A — FOUNDATION SKILLS

1. Write the integer represented by 7 units below zero. *[1 mark]*
2. State the opposite of -13. *[1 mark]*
3. Arrange -8, 5, 0, -2 and 11 in ascending order. *[2 marks]*
4. Which is greater: -6 or -9? *[1 mark]*
5. Evaluate $|-17|$. *[1 mark]*
6. Calculate: $-8 + 15$. *[1 mark]*
7. Calculate: $12 + (-19)$. *[1 mark]*
8. Calculate: $-14 - 9$. *[1 mark]*
9. Calculate: $-18 - (-7)$. *[2 marks]*
10. Evaluate $(-6) \times (-8)$. *[1 mark]*

SECTION B — STANDARD PRACTICE

11. Evaluate $72 \div (-9)$. *[1 mark]*
12. Calculate $(-7) \times 5 + 12$. *[2 marks]*
13. Evaluate $18 - 4 \times 7$. *[2 marks]*
14. Evaluate $(-24 \div 6) \times (-3)$. *[2 marks]*
15. Simplify $-5 + 3(-4)$. *[2 marks]*
16. Evaluate $20 - [6 + (-9)]$. *[2 marks]*
17. Find the value of $(-3)^2 - 14$. *[2 marks]*
18. Evaluate $48 \div [(-2) \times 4]$. *[2 marks]*
19. If $x = -5$ and $y = 8$, find $2x - y$. *[2 marks]*
20. Find the integer halfway between -12 and 6. *[2 marks]*

SECTION C — APPLICATION & KJSEA-STYLE

21. At dawn the temperature was -4°C . By midday it had risen by 11°C . What was the midday temperature? *[2 marks]*
22. A lift is on floor 6. It goes down 9 floors. On which floor does it stop if ground floor is 0? *[2 marks]*

23. A diver is 18 m below sea level and rises 7 m. Represent the final position as an integer. [2 marks]
24. A trader has KSh 2,400 in an account and pays a bill of KSh 3,150. Represent the resulting balance as an integer. [2 marks]
25. The temperature changes from 6°C to -8°C . Find the change in temperature. [3 marks]
26. A hiker is at an altitude of 320 m. She descends 475 m. What is her new position relative to sea level? [3 marks]
27. A football team receives +3 points for a win, +1 for a draw and 0 for a loss. It records 5 wins, 2 draws and 3 losses. Find its total points. [3 marks]
28. A submarine at -85 m descends 35 m and then rises 48 m. Find its final depth. [3 marks]
29. During four transactions, an account changes by +KSh 1,200, -KSh 850, -KSh 600 and +KSh 400. Find the net change. [3 marks]
30. Evaluate $-18 + 6 \times (-4) - (-15)$. Show the correct order of operations. [3 marks]
31. A number is 9 less than -4. Find the number. [2 marks]
32. The sum of two integers is -17. One integer is 8. Find the other. [3 marks]
33. The product of two integers is -63. One integer is 9. Find the other. [2 marks]
34. Starting at -6 on a number line, a learner moves 14 units right, 9 units left and 4 units right. Where does the learner finish? [3 marks]
35. A freezer was at -12°C . Its temperature rose by 3°C each hour for 5 hours. Find the final temperature. [3 marks]

SECTION D — CHALLENGE CORNER

36. Find an integer n such that $|n| = 11$ and $n < 0$. [2 marks]
37. Three consecutive integers have a sum of -24. Find the integers. [4 marks]
38. A mine cage starts 35 m above sea level. It descends 12 m per minute for 6 minutes, then rises 18 m. Find its final position relative to sea level. [4 marks]
39. A game awards 8 points for a correct answer and deducts 5 points for an incorrect answer. A learner answers 12 questions: 7 correctly and 5 incorrectly. Find the final score. [4 marks]
40. An integer x satisfies $-3x + 5 = 26$. Find x and verify your answer by substitution. [4 marks]

QUICK ANSWER KEY

Q	Answer	Q	Answer
1	-7	21	7°C
2	13	22	-3
3	-8, -2, 0, 5, 11	23	-11 m
4	-6	24	-KSh 750
5	17	25	-14°C (a fall of 14°C)
6	7	26	-155 m
7	-7	27	17 points
8	-23	28	-72 m
9	-11	29	+KSh 150
10	48	30	-27
11	-8	31	-13
12	-23	32	-25
13	-10	33	-7
14	12	34	3
15	-17	35	3°C
16	23	36	-11
17	-5	37	-9, -8, -7
18	-6	38	-19 m
19	-18	39	31 points
20	-3	40	x = -7

CHAPTER 5: MATRICES

40 Questions • Matrix Operations • Applications • Answers & Worked Solutions

Skills Covered

Order of a matrix; identifying elements, rows and columns; equality of matrices; addition and subtraction; scalar multiplication; multiplication of compatible matrices; simple unknowns in matrices; and contextual applications.

SECTION A — FOUNDATION SKILLS

1. State the order of the matrix $A = \begin{bmatrix} 3 & 5 & -2 \\ 7 & 0 & 4 \end{bmatrix}$. [1 mark]
2. For $B = \begin{bmatrix} 6 & -1 \\ 3 & 8 \\ 5 & 2 \end{bmatrix}$, state the element b_{21} . [1 mark]
3. Write the first row of $C = \begin{bmatrix} 4 & 7 & 1 \\ -2 & 5 & 9 \end{bmatrix}$. [1 mark]
4. Write the second column of $D = \begin{bmatrix} 3 & 8 \\ 6 & -4 \\ 1 & 7 \end{bmatrix}$. [1 mark]
5. How many elements are in a 3×4 matrix? [1 mark]
6. If $\begin{bmatrix} x & 5 \\ 2 & 7 \end{bmatrix} = \begin{bmatrix} 9 & 5 \\ 2 & 7 \end{bmatrix}$, find x . [1 mark]
7. If $\begin{bmatrix} 4 & y \\ -3 & 6 \end{bmatrix} = \begin{bmatrix} 4 & 8 \\ -3 & 6 \end{bmatrix}$, find y . [1 mark]
8. Find $\begin{bmatrix} 2 & 3 \\ 1 & 5 \end{bmatrix} + \begin{bmatrix} 4 & -1 \\ 6 & 2 \end{bmatrix}$. [2 marks]
9. Find $\begin{bmatrix} 7 & 4 \\ 3 & 9 \end{bmatrix} - \begin{bmatrix} 2 & 1 \\ 5 & 6 \end{bmatrix}$. [2 marks]
10. Find $3\begin{bmatrix} 2 & -1 \\ 4 & 5 \end{bmatrix}$. [2 marks]

SECTION B — STANDARD PRACTICE

11. Given $A = \begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 2 \\ -1 & 6 \end{bmatrix}$, find $A + B$. [2 marks]
12. Using the matrices in Question 11, find $2A$. [2 marks]
13. Using the matrices in Question 11, find $2A - B$. [3 marks]
14. Find x and y if $\begin{bmatrix} x + 1 & 4 \\ 3 & y - 2 \end{bmatrix} = \begin{bmatrix} 7 & 4 \\ 3 & 5 \end{bmatrix}$. [3 marks]
15. Given $P = \begin{bmatrix} 3 & 1 & 2 \\ 0 & 4 & -1 \end{bmatrix}$, find $2P$. [2 marks]
16. Find $\begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix} \times \begin{bmatrix} 5 \\ 2 \end{bmatrix}$. [3 marks]
17. Find $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \times \begin{bmatrix} 2 & 0 \\ 1 & 5 \end{bmatrix}$. [4 marks]
18. Find $\begin{bmatrix} 4 & -1 \\ 2 & 3 \end{bmatrix} \times \begin{bmatrix} 1 & 2 \\ 0 & 5 \end{bmatrix}$. [4 marks]
19. State whether a 2×3 matrix can be multiplied by a 2×2 matrix in that order. Give a reason. [2 marks]
20. A is a 3×2 matrix and B is a 2×4 matrix. State the order of AB . [2 marks]

SECTION C — APPLICATION & KJSEA-STYLE

21. A shop records sales of pens and books on Monday and Tuesday as $S = \begin{bmatrix} 30 & 12 \\ 25 & 18 \end{bmatrix}$, where columns represent pens and books. Find the total sales matrix if Wednesday sales are $W = \begin{bmatrix} 20 & 15 \\ 0 & \end{bmatrix}$

0]] and only the first row of W is used as an additional day's sales. State the combined sales for Monday and Wednesday as a 1×2 matrix. [3 marks]

22. A farmer has 12 cows and 18 goats. Each cow consumes 8 kg of feed per day and each goat 3 kg. Use matrix multiplication to find the total daily feed consumption. [4 marks]

23. A school buys 15 Mathematics books at KSh 420 each and 10 Science books at KSh 500 each. Represent quantities as a 1×2 matrix and prices as a 2×1 matrix, then find the total cost. [4 marks]

24. A café sells tea and snacks. On Friday it sells 80 teas and 45 snacks; on Saturday 95 teas and 60 snacks. Write a 2×2 sales matrix with days as rows. [2 marks]

25. Using the matrix from Question 24, if tea costs KSh 30 and a snack KSh 50, use matrix multiplication to find the revenue for each day. [4 marks]

26. A learner scores [[18, 15, 20], [16, 19, 17]] in three tests for two subjects. If 2 marks are added to every score, write the new matrix. [3 marks]

27. Two branches record monthly sales (in thousands of shillings) as $A = \begin{bmatrix} 120 & 90 \\ 110 & 100 \end{bmatrix}$ and $B = \begin{bmatrix} 80 & 70 \\ 95 & 85 \end{bmatrix}$. Find $A + B$. [3 marks]

28. A company reduces every entry in matrix $\begin{bmatrix} 50 & 40 \\ 30 & 20 \end{bmatrix}$ by 10%. Find the new matrix. [3 marks]

29. Given $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$ and $X = \begin{bmatrix} x \\ y \end{bmatrix}$, write AX as a 2×1 matrix. [3 marks]

30. Using Question 29, if $AX = \begin{bmatrix} 13 \\ 14 \end{bmatrix}$, form the two simultaneous equations represented by the matrices. [3 marks]

31. A transport firm operates 4 vans and 3 buses. Each van makes 6 trips and each bus 4 trips. Represent vehicles as $\begin{bmatrix} 4 & 3 \end{bmatrix}$ and trips per vehicle as $\begin{bmatrix} 6 \\ 4 \end{bmatrix}$. Find the total number of trips. [3 marks]

32. A school canteen sells 40 plates of rice and 25 plates of beans on Day 1, and 35 plates of rice and 30 plates of beans on Day 2. If prices are KSh 80 and KSh 60 respectively, find the revenue on each day using matrices. [4 marks]

33. $A = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 1 \\ 2 & 5 \end{bmatrix}$. Calculate AB and BA . Hence state whether $AB = BA$. [5 marks]

34. Find k if $2\begin{bmatrix} k & 3 \\ 1 & 4 \end{bmatrix} = \begin{bmatrix} 10 & 6 \\ 2 & 8 \end{bmatrix}$. [2 marks]

35. The matrix $\begin{bmatrix} x & 2 \\ 3 & y \end{bmatrix} + \begin{bmatrix} 4 & 1 \\ -1 & 5 \end{bmatrix}$ equals $\begin{bmatrix} 9 & 3 \\ 2 & 12 \end{bmatrix}$. Find x and y . [3 marks]

SECTION D — CHALLENGE CORNER

36. Given $A = \begin{bmatrix} 2 & 1 \\ 3 & 2 \end{bmatrix}$, calculate A^2 . [4 marks]

37. Given $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and $A = \begin{bmatrix} 5 & -2 \\ 3 & 4 \end{bmatrix}$, calculate AI and IA . What do you observe? [4 marks]

38. Find x if $\begin{bmatrix} x & 2 \end{bmatrix} \times \begin{bmatrix} 3 \\ 4 \end{bmatrix} = \begin{bmatrix} 17 \end{bmatrix}$. [3 marks]

39. A cinema sells adult and child tickets. On one day, 120 adult and 80 child tickets are sold; on another, 90 adult and 110 child tickets are sold. Adult tickets cost KSh 500 and child tickets KSh 300.

CHAPTER 10: MASS, VOLUME, WEIGHT AND DENSITY

35 Questions • Density • Mass & Volume • Weight • Applications • Answers & Worked Solutions

Skills Covered

Mass and weight; density = mass $\div$ volume; finding mass or volume from density; unit conversions; displacement; comparing materials; and practical applications. Unless otherwise stated, take gravitational field strength $g = 10 \text{ N/kg}$.

SECTION A — FOUNDATION SKILLS

1. State the SI unit of mass. *[1 mark]*
2. State the SI unit of weight. *[1 mark]*
3. Write the formula for density in terms of mass and volume. *[1 mark]*
4. A substance has mass 240 g and volume 80 cm^3 . Find its density. *[2 marks]*
5. A block has density 2.5 g/cm^3 and volume 40 cm^3 . Find its mass. *[2 marks]*
6. A liquid has mass 360 g and density 1.2 g/cm^3 . Find its volume. *[2 marks]*
7. Convert 3.5 kg to grams. *[1 mark]*
8. Convert $2,400 \text{ cm}^3$ to litres. *[1 mark]*
9. Find the weight of a 6 kg object when $g = 10 \text{ N/kg}$. *[2 marks]*
10. An object weighs 150 N where $g = 10 \text{ N/kg}$. Find its mass. *[2 marks]*

SECTION B — STANDARD PRACTICE

11. A cuboid measuring 5 cm by 4 cm by 3 cm has mass 480 g. Find its density. *[3 marks]*
12. A cube of side 4 cm has density 2 g/cm^3 . Find its mass. *[3 marks]*
13. A metal block has mass 1.56 kg and volume 200 cm^3 . Find its density in g/cm^3 . *[3 marks]*
14. A liquid has density 0.8 g/cm^3 . Find the mass of 750 cm^3 of the liquid. *[2 marks]*
15. A material has density 6 g/cm^3 and mass 1.8 kg. Find its volume in cm^3 . *[3 marks]*
16. A stone has mass 540 g. When submerged in water, the water level rises from 350 cm^3 to 550 cm^3 . Find the density of the stone. *[3 marks]*
17. A 2.5 kg object is on Earth where $g = 10 \text{ N/kg}$. Find its weight. *[2 marks]*
18. A body weighs 420 N where $g = 10 \text{ N/kg}$. Find its mass. *[2 marks]*
19. Explain briefly why mass remains the same when an object is taken from Earth to the Moon but its weight changes. *[2 marks]*
20. Two equal-volume blocks have densities 2.7 g/cm^3 and 7.8 g/cm^3 . Which block has the greater mass? Give a reason. *[2 marks]*

SECTION C — APPLICATION & KJSEA-STYLE

21. A rectangular metal bar measures 20 cm by 5 cm by 4 cm and has mass 3.2 kg. Find its density in g/cm^3 . [4 marks]
22. A cylindrical metal rod has radius 3.5 cm, length 20 cm and mass 6.16 kg. Find its density in g/cm^3 . Use $\pi = 22/7$. [4 marks]
23. A tank contains 120 litres of oil of density 0.75 kg/L. Find the mass of the oil. [3 marks]
24. A container holds 2.5 m^3 of water. Taking the density of water as $1,000 \text{ kg/m}^3$, find the mass of the water. [3 marks]
25. A stone of mass 1.35 kg displaces 500 cm^3 of water. Find its density in g/cm^3 . [3 marks]
26. A solid has density 4.5 g/cm^3 and volume $1,200 \text{ cm}^3$. Find (a) its mass in kilograms and (b) its weight in newtons. [4 marks]
27. A delivery truck carries 80 identical boxes, each of mass 12.5 kg. Find the total weight of the boxes. [3 marks]
28. A 600 cm^3 bottle is filled with a liquid of density 1.1 g/cm^3 . The empty bottle has mass 120 g. Find the total mass of the filled bottle. [4 marks]
29. A cube of side 10 cm has mass 7.8 kg. Find its density in g/cm^3 . [3 marks]
30. A piece of wood has density 0.6 g/cm^3 and volume $2,500 \text{ cm}^3$. Find its mass in kilograms. [3 marks]

SECTION D — CHALLENGE CORNER

31. A metal alloy is made from 200 cm^3 of material A of density 8 g/cm^3 and 300 cm^3 of material B of density 4 g/cm^3 . Assuming volumes add, find the average density of the alloy. [5 marks]
32. A hollow object has an external volume of 800 cm^3 and mass 2.1 kg. The material from which it is made has density 3.5 g/cm^3 . Find the volume of the hollow space. [5 marks]
33. A rectangular block measures 25 cm by 12 cm by 8 cm. Its density is 2.5 g/cm^3 . Find its weight in newtons. [4 marks]
34. A stone has mass 780 g. It is placed in a measuring cylinder containing 500 cm^3 of water, and the new reading is 620 cm^3 . A second stone of the same material has volume 200 cm^3 . Find the mass of the second stone. [5 marks]
35. A metal cube has weight 78 N and side length 10 cm. Taking $g = 10 \text{ N/kg}$, calculate its density in kg/m^3 . [5 marks]

CHAPTER 17: TRIGONOMETRY

45 Questions • Right-Angled Triangles • SOHCAHTOA • Missing Sides & Angles • Applications • Answers & Worked Solutions

Skills Covered

Identifying the hypotenuse, opposite and adjacent sides; using sine, cosine and tangent ratios; finding missing sides and angles in right-angled triangles; and solving practical height, distance, elevation and depression problems. Give non-exact answers to 1 decimal place unless otherwise stated.

SECTION A — FOUNDATION SKILLS

1. In a right-angled triangle, what is the name of the side opposite the right angle? *[1 mark]*
2. Complete: $\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$. *[1 mark]*
3. Complete: $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$. *[1 mark]*
4. Complete: $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$. *[1 mark]*
5. Which trigonometric ratio relates the opposite side and hypotenuse? *[1 mark]*
6. Which trigonometric ratio relates the adjacent side and hypotenuse? *[1 mark]*
7. Which trigonometric ratio relates the opposite and adjacent sides? *[1 mark]*
8. In a right triangle, relative to angle θ , the opposite side is 6 cm and the hypotenuse is 10 cm. Find $\sin \theta$. *[2 marks]*
9. Relative to angle θ , the adjacent side is 8 cm and the hypotenuse is 10 cm. Find $\cos \theta$. *[2 marks]*
10. Relative to angle θ , the opposite side is 9 cm and the adjacent side is 12 cm. Find $\tan \theta$. *[2 marks]*

SECTION B — STANDARD PRACTICE

11. A right triangle has hypotenuse 10 cm and angle 30° . Find the side opposite the 30° angle. *[3 marks]*
12. A right triangle has hypotenuse 14 cm and angle 60° . Find the side adjacent to the 60° angle. *[3 marks]*
13. A right triangle has adjacent side 12 cm and angle 45° . Find the opposite side. *[3 marks]*
14. A right triangle has opposite side 8 cm and angle 35° . Find the hypotenuse. *[3 marks]*
15. A right triangle has adjacent side 15 cm and angle 40° . Find the hypotenuse. *[3 marks]*
16. A right triangle has opposite side 9 cm and angle 28° . Find the adjacent side. *[3 marks]*
17. A right triangle has opposite side 12 cm and hypotenuse 20 cm. Find angle θ . *[3 marks]*
18. A right triangle has adjacent side 7 cm and hypotenuse 13 cm. Find angle θ . *[3 marks]*
19. A right triangle has opposite side 10 cm and adjacent side 6 cm. Find angle θ . *[3 marks]*
20. A ladder 5 m long rests against a vertical wall. Its foot is 3 m from the wall. Find the angle the ladder makes with the ground. *[4 marks]*

21. A 10 m rope is tied from the ground to the top of a vertical pole. The rope makes an angle of 50° with the ground. Find the height reached on the pole. [3 marks]
22. A ramp rises 1.2 m over a horizontal distance of 4.5 m. Find its angle of inclination. [3 marks]
23. From a point on level ground, the angle of elevation to the top of a pole is 32° . The point is 18 m from the foot of the pole. Find the pole's height. [3 marks]
24. A tree casts a 12 m shadow when the angle of elevation of the Sun is 38° . Find the height of the tree. [3 marks]
25. A kite string 30 m long makes an angle of 55° with the horizontal. Ignoring sag, find the vertical height of the kite above the hand. [3 marks]

SECTION C — APPLICATION & KJSEA-STYLE

26. A learner stands 20 m from a building. The angle of elevation to the top is 40° . Find the height of the building above the learner's eye level. [4 marks]
27. From the top of a 25 m cliff, the angle of depression to a boat is 30° . Find the horizontal distance of the boat from the foot of the cliff. [4 marks]
28. A ladder reaches 6 m up a wall and makes an angle of 65° with the ground. Find the length of the ladder. [4 marks]
29. A guy wire 18 m long supports a mast and makes an angle of 58° with the ground. Find the vertical height at which it is attached to the mast. [4 marks]
30. A road rises 5 m for every 40 m horizontally. Find the angle the road makes with the horizontal. [3 marks]
31. A tower is viewed from a point 35 m from its base at an angle of elevation of 46° . Find the tower's height. [4 marks]
32. A plane is observed at an angle of elevation of 25° from a point on the ground. If its horizontal distance from the observer is 1.2 km, find its altitude in kilometres. [4 marks]
33. A vertical flagpole is 9 m high. From a point on level ground, its top is seen at an angle of elevation of 37° . Find the distance from the point to the foot of the pole. [4 marks]
34. A 15 m cable stretches from the top of a vertical post to a point on the ground 9 m from the foot of the post. Find the angle the cable makes with the ground. [4 marks]
35. A building casts a 20 m shadow. If the angle of elevation of the Sun is 52° , find the building's height. [4 marks]
36. From a point 50 m from the base of a tower, the angle of elevation to the top is 28° . Find the line-of-sight distance from the observer to the top. [4 marks]
37. A ramp 8 m long rises to a platform 2.5 m high. Find the angle the ramp makes with the horizontal. [4 marks]

CHAPTER 19: PROBABILITY

45 Questions • Probability Scale • Sample Spaces • Complements • Combined Events • Tree Diagrams • Answers & Worked Solutions

Skills Covered

Expressing probability from 0 to 1; identifying outcomes and sample spaces; theoretical probability; complementary events; mutually exclusive events; independent events; probability of combined events; simple tree diagrams; and practical probability applications.

SECTION A — FOUNDATION SKILLS

1. State the probability of an impossible event. *[1 mark]*
2. State the probability of a certain event. *[1 mark]*
3. A fair coin is tossed once. Find $P(\text{Head})$. *[1 mark]*
4. A fair six-sided die is rolled once. Find $P(\text{rolling a 4})$. *[1 mark]*
5. A fair die is rolled. Find $P(\text{rolling an even number})$. *[2 marks]*
6. A fair die is rolled. Find $P(\text{rolling a number greater than 4})$. *[2 marks]*
7. A bag contains 3 red and 5 blue balls. One ball is selected at random. Find $P(\text{red})$. *[2 marks]*
8. Using Question 7, find $P(\text{blue})$. *[2 marks]*
9. Write the sample space when a coin is tossed once. *[1 mark]*
10. Write the sample space when a fair die is rolled once. *[1 mark]*

SECTION B — STANDARD PRACTICE

11. A spinner has four equal sectors labelled A, B, C and D. Find $P(C)$. *[1 mark]*
12. A card is chosen at random from cards numbered 1 to 10. Find $P(\text{choosing 7})$. *[1 mark]*
13. From cards numbered 1 to 10, find $P(\text{choosing an even number})$. *[2 marks]*
14. From cards numbered 1 to 10, find $P(\text{choosing a prime number})$. *[2 marks]*
15. A bag contains 4 green, 3 yellow and 5 black beads. Find $P(\text{yellow})$. *[2 marks]*
16. Using Question 15, find $P(\text{not yellow})$. *[2 marks]*
17. If $P(A)=0.35$, find $P(\text{not } A)$. *[2 marks]*
18. If $P(\text{rain})=0.2$, find $P(\text{no rain})$. *[2 marks]*
19. A fair coin is tossed twice. Write the sample space. *[2 marks]*
20. Using Question 19, find $P(\text{exactly one Head})$. *[2 marks]*
21. Two fair coins are tossed. Find $P(\text{two Heads})$. *[2 marks]*
22. A fair die is rolled. Find $P(\text{number less than 3 or greater than 5})$. *[2 marks]*
23. A card numbered 1 to 12 is selected. Find $P(\text{a multiple of 3})$. *[2 marks]*

24. A number is chosen from 1 to 20. Find $P(\text{a multiple of 5})$. [2 marks]

25. A bag contains 6 white and 4 red counters. Find the probability of selecting a counter that is not red. [2 marks]

SECTION C — APPLICATION & KJSEA-STYLE

26. A class has 18 girls and 12 boys. One learner is selected at random. Find $P(\text{girl})$. [2 marks]

27. A box contains 5 red, 7 blue and 8 green pens. One pen is chosen. Find $P(\text{blue or green})$. [3 marks]

28. A fair die is rolled. Let A be “an even number” and B be “a number greater than 4”. Find $P(A \text{ or } B)$. [3 marks]

29. A card is selected from cards numbered 1 to 15. Find $P(\text{the number is divisible by 2 or by 5})$. [4 marks]

30. A coin is tossed and a fair die is rolled. How many outcomes are in the sample space? [2 marks]

31. A coin is tossed and a die is rolled. Find $P(\text{Head and an even number})$. [3 marks]

32. Two fair coins are tossed. Find $P(\text{at least one Head})$. [3 marks]

33. A fair die is rolled twice. Find $P(\text{rolling a 6 on both rolls})$. [3 marks]

34. A bag contains 3 red and 2 blue balls. A ball is selected, replaced, and another selected. Find $P(\text{red then red})$. [3 marks]

35. Using the bag in Question 34, find $P(\text{red then blue})$ when the first ball is replaced. [3 marks]

36. A spinner has equal sectors numbered 1, 2, 3 and 4. It is spun twice. Find $P(\text{getting 4 on both spins})$. [3 marks]

37. A fair coin is tossed three times. Find $P(\text{all Heads})$. [3 marks]

38. A fair coin is tossed three times. Find $P(\text{no Heads})$. [3 marks]

39. A box has 2 defective and 8 good bulbs. One bulb is chosen at random. Find $P(\text{good})$ and $P(\text{defective})$. [3 marks]

40. The probability that a learner passes a test is 0.85. Find the probability that the learner does not pass. [2 marks]

SECTION D — CHALLENGE CORNER

41. A bag contains 4 red and 6 blue balls. Two balls are selected one after another with replacement. Find $P(\text{one red and one blue in any order})$. [5 marks]

42. A fair die is rolled twice. Find the probability that the sum of the two scores is 7. [5 marks]

43. Two independent events A and B have $P(A)=0.6$ and $P(B)=0.5$. Find $P(A \text{ and } B)$, then find $P(\text{at least one of A or B occurs})$. [5 marks]

44. A tree diagram represents two independent coin tosses. Using the branch probabilities, find the probability of getting exactly one Tail. [4 marks]