

# SCO INTERNATIONAL MATHS OLYMPIAD

## CLASS 10 QUESTION PAPER

A professional objective-format paper for schools, teachers, parents, and students

**Designed from Class 10 mathematics pathways and aligned with SCO's platform flow for guided preparation, practice, reporting, and future-ready academic growth.**

- Class 10 / secondary-level mathematics challenge paper
- question blocks with answer keys and explanations
- balanced coverage of algebra, geometry, trigonometry, statistics, probability, and achiever reasoning

Maths	Algebra	Geometry	Trigonometry	Statistics
Mensuration	Reasoning	Case Study	Achievers	Practice

## SCO International Maths Olympiad - Class 10 Sample Question Paper

**DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO**

Class / Grade	Class 10 / Grade 10
Question Paper	Sample Set B   Objective Type   50 Questions
Time Allowed	60 minutes

## Guidelines for the Candidate

- Before the exam begins, candidates may use the additional time provided for completing personal details on the OMR sheet or response sheet.
- Clearly write name, school code, class, roll number, registration ID, and contact number in the space provided.
- The paper contains 50 objective-type questions across General Mathematics, Reason/Assertion, Case Study, and Achievers sections.
- Every question has only one correct answer unless explicitly stated otherwise. Select one response choice only.
- Use an HB pencil or a blue/black ballpoint pen to mark responses as instructed by the invigilator or online platform.
- Calculator use is not allowed. Rough work may be done in the space provided at the end of the booklet.
- At the conclusion of the test, submit the OMR sheet or final online response as instructed.

## Candidate Details

<b>Name</b>	.....
<b>Registration ID / Contact No.</b>	.....

A fresh sample paper following the same objective-paper pattern, with new questions, answer keys, explanations, and only necessary diagrams inside question blocks.

## GENERAL MATHEMATICS

Q.1

If the HCF of 252 and 198 is expressed as  $252m + 198n$ , what is the HCF?

- A. 18
- B. 36
- C. 54
- D. 72

**Answer:** A. 18

**Explanation:** Using Euclid algorithm:  $252 = 198 + 54$ ,  $198 = 3(54) + 36$ ,  $54 = 36 + 18$ ,  $36 = 2(18)$ . HCF = 18.

Q.2

If  $p(x) = x^2 - 8x + 15$ , what are the zeros of  $p(x)$ ?

- A. 3 and 5
- B. -3 and -5
- C. 1 and 15
- D. 4 and 4

**Answer:** A. 3 and 5

**Explanation:**  $x^2 - 8x + 15 = (x - 3)(x - 5)$ . Hence zeros are 3 and 5.

Q.3

Solve the pair  $3x + 2y = 18$  and  $x - y = 1$ .

- A.  $x = 4, y = 3$
- B.  $x = 3, y = 4$
- C.  $x = 5, y = 4$
- D.  $x = 2, y = 1$

**Answer:** A.  $x = 4, y = 3$

**Explanation:** From  $x - y = 1$ ,  $x = y + 1$ . Substitute:  $3(y+1) + 2y = 18$  gives  $5y = 15$  so  $y = 3$  and  $x = 4$ .

Q.4

For  $x^2 - 5x + 6 = 0$ , find the product of the roots.

- A. 5
- B. 6
- C. -5
- D. -6

**Answer:** B. 6

**Explanation:** For  $ax^2 + bx + c = 0$ , product of roots =  $c/a = 6$ .

**Q.5****The 5th term of an AP is 17 and the common difference is 3. Find the first term.**

- A. 3
- B. 5
- C. 7
- D. 9

**Answer: B. 5****Explanation:**  $a_5 = a + 4d = 17$ . With  $d = 3$ ,  $a + 12 = 17$ , so  $a = 5$ .**Q.6****In similar triangles, corresponding sides are in the ratio 2:5. What is the ratio of their areas?**

- A. 2:5
- B. 4:25
- C. 5:2
- D. 25:4

**Answer: B. 4:25****Explanation:** Areas of similar triangles are in the square of the side ratio:  $2^2:5^2 = 4:25$ .**Q.7****Find the distance between A(1,2) and B(7,10).**

- A. 8
- B. 10
- C. 12
- D. 14

**Answer: B. 10****Explanation:** Distance =  $\sqrt{(7-1)^2 + (10-2)^2} = \sqrt{36 + 64} = 10$ .**Q.8****If  $\tan \theta = \frac{3}{4}$  for an acute angle  $\theta$ , find  $\sin \theta$ .**

- A.  $\frac{3}{5}$
- B.  $\frac{4}{5}$
- C.  $\frac{5}{3}$
- D.  $\frac{5}{4}$

**Answer: A.  $\frac{3}{5}$** **Explanation:** The right-triangle sides are opposite 3, adjacent 4, hypotenuse 5. Hence  $\sin \theta = \frac{3}{5}$ .

Q.9

A 10 m ladder makes an angle of  $60^\circ$  with the ground. How high does it reach on the wall?

- A. 5 m
- B.  $5\sqrt{3}$  m
- C.  $10\sqrt{3}$  m
- D. 20 m

**Answer:** B.  $5\sqrt{3}$  m

**Explanation:** Height =  $10 \sin 60^\circ = 10 \times \frac{\sqrt{3}}{2} = 5\sqrt{3}$  m.

Q.10

A tangent is drawn to a circle at a point. What is the angle between the tangent and the radius at the point of contact?

- A.  $30^\circ$
- B.  $45^\circ$
- C.  $60^\circ$
- D.  $90^\circ$

**Answer:** D.  $90^\circ$

**Explanation:** A radius through the point of contact is perpendicular to the tangent.

Q.11

The area of a circle is  $154 \text{ cm}^2$ . Taking  $\pi = \frac{22}{7}$ , find the radius.

- A. 5 cm
- B. 7 cm
- C. 14 cm
- D. 11 cm

**Answer:** B. 7 cm

**Explanation:**  $\pi r^2 = 154$  gives  $r^2 = 154 \times \frac{7}{22} = 49$ , so  $r = 7$  cm.

Q.12

A cylinder has radius 7 cm and height 10 cm. Taking  $\pi = \frac{22}{7}$ , find its curved surface area.

- A.  $220 \text{ cm}^2$
- B.  $330 \text{ cm}^2$
- C.  $440 \text{ cm}^2$
- D.  $550 \text{ cm}^2$

**Answer:** C.  $440 \text{ cm}^2$

**Explanation:** CSA =  $2 \pi r h = 2 \times \frac{22}{7} \times 7 \times 10 = 440 \text{ cm}^2$ .

**Q.13****The mean of 6, 8, 10, 12, and 14 is:**

- A. 8
- B. 9
- C. 10
- D. 12

**Answer: C. 10****Explanation:** Mean =  $(6 + 8 + 10 + 12 + 14)/5 = 50/5 = 10$ .**Q.14****A card is drawn from a standard deck of 52 cards. What is the probability of drawing an ace?**

- A.  $1/13$
- B.  $1/4$
- C.  $4/13$
- D.  $1/52$

**Answer: A.  $1/13$** **Explanation:** There are 4 aces in 52 cards, so probability =  $4/52 = 1/13$ .**Q.15****If the discriminant of  $x^2 + kx + 9 = 0$  is zero, find k when k is positive.**

- A. 3
- B. 6
- C. 9
- D. 12

**Answer: B. 6****Explanation:** For equal roots,  $D = k^2 - 4(1)(9) = 0$ . Hence  $k^2 = 36$ , so  $k = 6$  when positive.**Q.16****The sum of the first 20 natural numbers is:**

- A. 190
- B. 200
- C. 210
- D. 220

**Answer: C. 210****Explanation:** Sum =  $n(n+1)/2 = 20 \times 21 / 2 = 210$ .

**Q.17****If  $\sec \theta = 13/5$  for an acute angle  $\theta$ , find  $\tan \theta$ .**

- A.  $5/12$
- B.  $12/5$
- C.  $13/12$
- D.  $12/13$

**Answer: B.  $12/5$** **Explanation:**  $\sec \theta = \text{hypotenuse}/\text{adjacent} = 13/5$ . Opposite side = 12 by Pythagoras.  $\tan \theta = 12/5$ .**Q.18****A cone has radius 3 cm and height 4 cm. Find its slant height.**

- A. 3 cm
- B. 4 cm
- C. 5 cm
- D. 7 cm

**Answer: C. 5 cm****Explanation:**  $l = \sqrt{r^2 + h^2} = \sqrt{9 + 16} = 5$  cm.**Q.19****The median of 4, 8, 10, 15, 20 is:**

- A. 8
- B. 10
- C. 12
- D. 15

**Answer: B. 10****Explanation:** The data is already ordered. The middle value is 10.**Q.20****Two coins are tossed. What is the probability of getting exactly one head?**

- A.  $1/4$
- B.  $1/2$
- C.  $3/4$
- D. 1

**Answer: B.  $1/2$** **Explanation:** Outcomes are HH, HT, TH, TT. Exactly one head occurs in HT and TH: 2 out of 4 =  $1/2$ .

Q.21

A polynomial has zeros 2 and -3. Which polynomial can represent it?

- A.  $x^2 + x - 6$
- B.  $x^2 - x - 6$
- C.  $x^2 + 5x + 6$
- D.  $x^2 - 5x + 6$

**Answer:** A.  $x^2 + x - 6$

**Explanation:** If zeros are 2 and -3, the polynomial is  $(x - 2)(x + 3) = x^2 + x - 6$ .

Q.22

Find the 10th term of the AP 4, 9, 14, ...

- A. 44
- B. 49
- C. 50
- D. 54

**Answer:** B. 49

**Explanation:** Here  $a = 4$  and  $d = 5$ .  $a_{10} = a + 9d = 4 + 45 = 49$ .

Q.23

If the point  $(k, 3)$  lies on  $2x + y = 11$ , find  $k$ .

- A. 2
- B. 3
- C. 4
- D. 5

**Answer:** C. 4

**Explanation:**  $2k + 3 = 11$ , so  $2k = 8$  and  $k = 4$ .

Q.24

The perimeter of a sector of radius 7 cm and arc length 11 cm is:

- A. 18 cm
- B. 25 cm
- C. 28 cm
- D. 36 cm

**Answer:** B. 25 cm

**Explanation:** Perimeter of sector = arc length +  $2r = 11 + 14 = 25$  cm.

**Q.25****The probability of an impossible event is:**

- A. 0
- B. 1
- C.  $1/2$
- D. Cannot be determined

**Answer: A. 0****Explanation:** An impossible event cannot occur, so its probability is 0.**Q.26****The mode of 2, 3, 3, 4, 5, 5, 5, 6 is:**

- A. 3
- B. 4
- C. 5
- D. 6

**Answer: C. 5****Explanation:** The value 5 occurs most frequently.**Q.27****If a cone and a cylinder have the same base radius and height, the ratio of their volumes is:**

- A. 1:1
- B. 1:2
- C. 1:3
- D. 3:1

**Answer: C. 1:3****Explanation:** Cone volume =  $(1/3)\pi r^2h$ , cylinder volume =  $\pi r^2h$ . Ratio = 1:3.

## REASON AND ASSERTION

Q.28

**Assertion (A):**  $\sqrt{2}$  is irrational. **Reason (R):** The square root of every prime number is irrational.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** 2 is prime, and the square root of a prime number is irrational.

Q.29

**Assertion (A):** The polynomial  $x^2 - 4$  has zeros 2 and -2. **Reason (R):**  $x^2 - 4 = (x - 2)(x + 2)$ .

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** The factorization shows the zeros directly.

Q.30

**Assertion (A):** The pair  $x + y = 5$  and  $2x + 2y = 12$  has no solution. **Reason (R):** Parallel distinct lines have no common point.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** The second equation is  $x + y = 6$ . The lines  $x + y = 5$  and  $x + y = 6$  are parallel and distinct.

Q.31

**Assertion (A):** The roots of  $x^2 - 4x + 4 = 0$  are equal. **Reason (R):** A quadratic equation has equal roots when its discriminant is zero.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** Here  $D = (-4)^2 - 4(1)(4) = 0$ , so roots are equal.

Q.32

**Assertion (A):** The 6th term of AP 2, 5, 8, ... is 17. **Reason (R):** The n-th term of an AP is  $a + (n - 1)d$ .

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:**  $a = 2, d = 3$ , so  $a_6 = 2 + 5(3) = 17$ .

Q.33

**Assertion (A):** All equilateral triangles are similar. **Reason (R):** All corresponding angles in equilateral triangles are  $60^\circ$ .

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** By AAA similarity, equilateral triangles are similar.

Q.34

**Assertion (A):** The point (3,4) is at a distance 5 from the origin. **Reason (R):** Distance from origin to (x,y) is  $\sqrt{x^2 + y^2}$ .

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** Distance =  $\sqrt{3^2 + 4^2} = 5$ .

Q.35

**Assertion (A):**  $\sin^2 \theta + \cos^2 \theta = 1$  for every  $\theta$ . **Reason (R):** It is a fundamental trigonometric identity.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** The reason correctly identifies the identity used.

Q.36

**Assertion (A):** A tangent to a circle is perpendicular to the radius at the point of contact. **Reason (R):** A chord always passes through the centre of a circle.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** C. A is true, but R is false.

**Explanation:** The assertion is true. A chord need not pass through the centre; only a diameter does.

Q.37

**Assertion (A):** The volume of a sphere of radius  $r$  is  $\frac{4}{3}\pi r^3$ . **Reason (R):** The curved surface area of a sphere is  $4\pi r^2$ .

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** B. Both A and R are true, but R is not the correct explanation of A.

**Explanation:** Both formulas are true, but the surface area formula does not explain the volume formula.

Q.38

**Assertion (A):** Mean of 5, 5, 5, 5 is 5. **Reason (R):** Mean is the sum of observations divided by the number of observations.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** Mean =  $\frac{20}{4} = 5$ .

Q.39

**Assertion (A):** The probability of getting a head when tossing a fair coin is  $\frac{1}{2}$ . **Reason (R):** A fair coin has two equally likely outcomes.

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** There are two equally likely outcomes, and one is head.

Q.40

**Assertion (A):** The area of a circle with radius 7 cm is  $154 \text{ cm}^2$  using  $\pi = \frac{22}{7}$ . **Reason (R):** Area of a circle is  $\pi r^2$ .

- A. Both A and R are true, and R is the correct explanation of A.
- B. Both A and R are true, but R is not the correct explanation of A.
- C. A is true, but R is false.
- D. A is false, but R is true.

**Answer:** A. Both A and R are true, and R is the correct explanation of A.

**Explanation:** Area =  $\frac{22}{7} \times 7 \times 7 = 154 \text{ cm}^2$ .

## ACHIEVERS SECTION

Q.41

Find  $k$  if the line  $3x + ky - 9 = 0$  passes through  $(1,2)$ .

- A. 2
- B. 3
- C. 4
- D. 5

**Answer:** B. 3**Explanation:** Substitute  $(1,2)$ :  $3 + 2k - 9 = 0$ . Hence  $2k = 6$  and  $k = 3$ .

Q.42

If one zero of  $2x^2 + px - 6$  is 1, find  $p$ .

- A. 2
- B. 4
- C. -4
- D. -2

**Answer:** B. 4**Explanation:** Substitute  $x = 1$ :  $2 + p - 6 = 0$ , so  $p = 4$ .

Q.43

A tower casts a 30 m shadow when the angle of elevation of the sun is  $30^\circ$ . Find the height of the tower.

- A.  $10\sqrt{3}$  m
- B.  $30\sqrt{3}$  m
- C. 10 m
- D. 15 m

**Answer:** A.  $10\sqrt{3}$  m**Explanation:**  $\tan 30^\circ = \text{height} / 30$ . Hence height =  $30/\sqrt{3} = 10\sqrt{3}$  m.

Q.44

The tangent lengths from an external point to a circle are 8 cm and  $x$  cm. Find  $x$ .

- A. 4
- B. 6
- C. 8
- D. 16

**Answer:** C. 8**Explanation:** Tangents drawn from an external point to a circle are equal in length.

Q.45

A cone has radius 6 cm and height 8 cm. Find its volume.

- A.  $96\pi\text{ cm}^3$
- B.  $120\pi\text{ cm}^3$
- C.  $144\pi\text{ cm}^3$
- D.  $288\pi\text{ cm}^3$

**Answer:** A.  $96\pi\text{ cm}^3$ **Explanation:** Volume =  $(1/3)\pi r^2h = (1/3)\pi(36)(8) = 96\pi\text{ cm}^3$ .

Q.46

The class intervals 0-10, 10-20, 20-30 have frequencies 5, 8, 7. What is the total frequency?

- A. 10
- B. 15
- C. 20
- D. 25

**Answer:** C. 20**Explanation:** Total frequency =  $5 + 8 + 7 = 20$ .

Q.47

Two balls are drawn from 3 red and 2 blue balls without replacement. Probability that both are red is:

- A.  $3/10$
- B.  $2/5$
- C.  $1/2$
- D.  $3/5$

**Answer:** A.  $3/10$ **Explanation:** Favourable ways =  $C(3,2) = 3$ . Total ways =  $C(5,2) = 10$ . Probability =  $3/10$ .

Q.48

If the centroid of triangle with vertices (0,0), (6,0), and (0,k) is (2,3), find k.

- A. 6
- B. 9
- C. 12
- D. 15

**Answer:** B. 9**Explanation:** The y-coordinate of centroid is  $k/3 = 3$ , so  $k = 9$ .

Q.49

If  $x = 2 + \sqrt{3}$ , find  $1/x$ .

- A.  $2 - \sqrt{3}$
- B.  $\sqrt{3} - 2$
- C.  $2 + \sqrt{3}$
- D. 1

**Answer:** A.  $2 - \sqrt{3}$ **Explanation:**  $1/(2 + \sqrt{3}) = (2 - \sqrt{3})/(4 - 3) = 2 - \sqrt{3}$ .

Q.50

The sum of first  $n$  terms of an AP is  $S_n = n^2$ . Find its 15th term.

- A. 27
- B. 29
- C. 30
- D. 31

**Answer:** B. 29**Explanation:**  $a_{15} = S_{15} - S_{14} = 225 - 196 = 29$ .

## Consolidated Answer Key

Q.No.	Answer	Q.No.	Answer	Section
1	Using Euclid algorithm: $252 = 198 + 54$ , $198 = 3(54) + 36$ , $54 = 36 + 18$ , $36 = 2(18)$	26	The value 5 occurs most frequently	IMO Class 10
2	$x^2 - 8x + 15 = (x - 3)(x - 5)$	27	Cone volume = $(1/3)\pi r^2h$ , cylinder volume = $\pi r^2h$	IMO Class 10
3	From $x - y = 1$ , $x = y + 1$	28	2 is prime, and the square root of a prime number is irrational	IMO Class 10
4	For $ax^2 + bx + c = 0$ , product of roots = $c/a = 6$	29	The factorization shows the zeros directly	IMO Class 10
5	$a_5 = a + 4d = 17$	30	The second equation is $x + y = 6$	IMO Class 10
6	Areas of similar triangles are in the square of the side ratio: $2^2:5^2 = 4:25$	31	Here $D = (-4)^2 - 4(1)(4) = 0$ , so roots are equal	IMO Class 10
7	Distance = $\sqrt{(7-1)^2 + (10-2)^2} = \sqrt{36 + 64} = 10$	32	$a = 2$ , $d = 3$ , so $a_6 = 2 + 5(3) = 17$	IMO Class 10
8	The right-triangle sides are opposite 3, adjacent 4, hypotenuse 5	33	By AAA similarity, equilateral triangles are similar	IMO Class 10
9	Height = $10 \sin 60^\circ = 10 \times \sqrt{3}/2 = 5\sqrt{3}$ m	34	Distance = $\sqrt{3^2 + 4^2} = 5$	IMO Class 10
10	A radius through the point of contact is perpendicular to the tangent	35	The reason correctly identifies the identity used	IMO Class 10
11	$\pi r^2 = 154$ gives $r^2 = 154 \times 7 / 22 = 49$ , so $r = 7$ cm	36	The assertion is true	IMO Class 10
12	$CSA = 2 \pi r h = 2 \times 22/7 \times 7 \times 10 = 440$ cm <sup>2</sup>	37	Both formulas are true, but the surface area formula does not explain the volume formula	IMO Class 10
13	Mean = $(6 + 8 + 10 + 12 + 14)/5 = 50/5 = 10$	38	Mean = $20/4 = 5$	IMO Class 10
14	There are 4 aces in 52 cards, so probability = $4/52 = 1/13$	39	There are two equally likely outcomes, and one is head	IMO Class 10
15	For equal roots, $D = k^2 - 4(1)(9) = 0$	40	Area = $22/7 \times 7 \times 7 = 154$ cm <sup>2</sup>	IMO Class 10
16	Sum = $n(n+1)/2 = 20 \times 21 / 2 = 210$	41	Substitute (1,2): $3 + 2k - 9 = 0$	IMO Class 10
17	$\sec \theta = \text{hypotenuse}/\text{adjacent} = 13/5$	42	Substitute $x = 1$ : $2 + p - 6 = 0$ , so $p = 4$	IMO Class 10

18	$l = \sqrt{r^2 + h^2} = \sqrt{9 + 16} = 5 \text{ cm}$	43	$\tan 30^\circ = \text{height} / 30$	IMO Class 10
19	The data is already ordered	44	Tangents drawn from an external point to a circle are equal in length	IMO Class 10
20	Outcomes are HH, HT, TH, TT	45	Volume = $(1/3)\pi r^2 h = (1/3)\pi(36)(8) = 96\pi \text{ cm}^3$	IMO Class 10
21	If zeros are 2 and -3, the polynomial is $(x - 2)(x + 3) = x^2 + x - 6$	46	Total frequency = $5 + 8 + 7 = 20$	IMO Class 10
22	Here $a = 4$ and $d = 5$	47	Favourable ways = $C(3,2) = 3$	IMO Class 10
23	$2k + 3 = 11$ , so $2k = 8$ and $k = 4$	48	The y-coordinate of centroid is $k/3 = 3$ , so $k = 9$	IMO Class 10
24	Perimeter of sector = arc length + $2r = 11 + 14 = 25 \text{ cm}$	49	$1/(2 + \sqrt{3}) = (2 - \sqrt{3})/(4 - 3) = 2 - \sqrt{3}$	IMO Class 10
25	An impossible event cannot occur, so its probability is 0	50	$a_{15} = S_{15} - S_{14} = 225 - 196 = 29$	IMO Class 10

