Myfuture CBC Revision

core mathematics - Grade 10

Question Paper

1. Two dice are rolled. What is the probability of getting doubles (both dice show the same number)?

A. 1/12

B. 1/3

C. 1/6

D. 1/36

2. On a distance-time graph, what does the slope of the line represent?

A. Total distance

B. Speed

C. Acceleration

D. Time taken

3. Given the quadratic y = -x^2 + 4x + 5, what is the maximum value of y?

A. 7

B. 4

C. 9

D. 5

4. What is the smallest positive angle of rotation that maps a regular hexagon onto itself?

A. 90°

B. 120°

C. 45°

D. 60°

5. If the probability of event A is 0.25 and probability of event B is 0.4, what is the smallest possible value of P(A and B)?

A. 0.25

B. 0.15

C. 0

D. 0.65

6. What is the opposite of the vector (4, -2)?

A. (-4, -2)

B. (2, -4)

C. (4, -2)

D. (-4, 2)

7. Find the area of a quarter circle whose diameter is 14 cm.

A. 49/2 cm^2

B. 49/4 cm^2

C. 196/4 cm^2

D. 14 cm^2

8. Find the arc length subtended by a 120° angle in a circle of radius 9 cm.

A. 9 cm

B. 6 cm

C. 12 cm

D. 3 cm

9. What is the vector from P(1, 2) to Q(4, 6)?

A. (3, 4)

B. (1, 1)

C. (-3, -4)

D. (4, 6)

10. Factorise completely: 4x^2 - 9.

A. (2x - 3)(2x + 3)

B. (2x - 9)(2x + 1)

C. (4x - 9)(x + 1)

D. (4x - 3)(x + 3)

11. A student walks 5 m east, then 3 m west. What is the student's displacement?

A. 2 m west

B. 2 m east

C. 8 m

D. 8 m east

12. A spinner is equally likely to stop at any of 8 numbered sections. What is the theoretical probability of landing on an odd number?

A. 3/8

B. 1/2

C. 5/8

D. 1/4

13. An object starting from rest accelerates uniformly at 4 m/s². How long does it take to reach 20 m/s?

A. 5 s

B. 10 s

C. 4 s

D. 8 s

14. A car accelerates uniformly from rest to 20 m/s in 10 s. What is its acceleration?

A. 10 m/s^2

B. 0.5 m/s^2

C. 200 m/s^2

D. 2 m/s^2

15. If OA = (2, 3) and OB = (5, 7) (position vectors from the origin), what is AB?

A. (3, 4)

B. (-3, -4)

C. (7, 10)

D. (5, 7)

16. A bag contains 3 red balls and 2 blue balls. One ball is drawn at random. What is the probability it is blue?

A. 1/5

B. 2/5

C. 1/2

D. 3/5

17. A fair six-faced die is rolled. What is the probability of getting an even number?

A. 1/3

B. 1/2

C. 2/3

D. 1/6

18. On a distance–time graph, what does a horizontal line parallel to the time axis represent?

A. Zero speed (object is at rest)

B. Constant positive acceleration

C. Increasing speed

D. Negative velocity

19. What is the discriminant of 2x^2 - 4x + 1 = 0, and what does it tell you about the roots?

A. Discriminant = 0; one repeated real root

B. Discriminant = 8; two distinct real roots

C. Discriminant = -8; two complex roots

D. Discriminant = 4; two equal real roots

20. A sector has area 9 cm² and central angle 90°. What is the radius of the circle?

A. 12 cm

B. 6 cm

C. 9 cm

D. 3 cm

21. What is the magnitude of the vector from (-1, 0) to (2, -4)?

A. 7

B. 13

C. 4

D. 5

22. Which of the following best describes a rotation that preserves the orientation of a figure?

A. Dilation

B. Direct isometry

C. Opposite isometry

D. Reflection

23. A runner goes 10 km east then 10 km west back to the start. What is the displacement?

A. 10 km west

B. 20 km

C. 10 km east

D. 0 km

24. A car moving at 20 m/s brakes uniformly with acceleration -4 m/s^2. How far does it travel before stopping?

A. 200 m

B. 5 m

C. 50 m

D. 100 m

25. A roundabout is shaped like a sector with radius 7 m and central angle 135°. What is its area?

A. 21/8 m²

B. 49/8 m²

C. 147/8 m²

D. 49/4 m²

26. From a bag of 7 red and 3 green sweets, one sweet is drawn at random. What is the probability it is not red?

A. 3/7

B. 7/10

C. 3/10

D. 1/10

27. A circle of radius 12 cm has a sector with central angle 30°. Find the area of the corresponding segment (sector minus triangle).

A. 24 18 cm²

B. 6 36 cm²

C. 12 36 cm²

D. 12 + 36 cm²

28. How long will it take to cover 500 m at a steady speed of 5 m/s?

A. 50 s

B. 2500 s

C. 100 s

D. 10 s

29. Find the area of a quarter circle of radius 8 cm.

A. 64 cm²

B. 8 cm²

C. 32 cm²

D. 16 cm²

30. What is a rotation in geometry?

A. A transformation that turns a figure about a fixed point through a given angle

B. A transformation that flips a figure over a line

C. A transformation that changes the size of a figure but keeps angles the same

D. A transformation that slides every point of a figure the same distance in the same direction

31. What is the instantaneous speed of an object?

A. Change in velocity

B. Total distance divided by total time

C. Average speed over a long trip

D. Speed measured at a specific instant in time

32. A regular pentagon is rotated through one step of its symmetry. What is the rotation angle?

A. 90°

B. 120°

C. 72°

D. 45°

33. Two vectors are equal if they have the same...

A. direction only

B. both magnitude and direction

C. magnitude only

D. starting point

34. Two people walk towards each other, one at 4 m/s and the other at 6 m/s. What is their relative speed?

A. 6 m/s

B. 2 m/s

C. 4 m/s

D. 10 m/s

35. Which of these is the centre of rotation property?

A. All points remain fixed

B. Only points on the axis of reflection stay fixed

C. The centre of rotation remains fixed while other points move around it

D. The centre moves to a new position after rotation

36. Which of the following best describes similar shapes?

A. They must be the same size and same shape

B. They have equal corresponding sides and different corresponding angles

C. They only share one equal angle

D. They have equal corresponding angles and corresponding sides in proportion

37. Which of these letters of the English alphabet has rotational symmetry of order 2 (180°) when written in capital form using standard block letters?

A. H

B. S

C. B

D. N

38. What is the sample space for tossing two coins once each?

A. H, T

B. HH, HT, TH, TT

C. H, H, T, T

D. HH, HT, TT

39. If f(x) = x^2 + bx + 16 and one root is 4, what is b?

A. -4

B. -8

C. 8

D. 4

40. A single card is drawn from a well-shuffled deck of 52 cards. What is the probability the card is a heart?

A. 1/13

B. 1/2

C. 1/4

D. 3/4

41. Find the area of the triangle formed by two radii and the included angle of 120° in a circle of radius 13 cm.

A. 263 cm^2

B. 1693 cm^2

C. 42.253 cm^2

D. 84.53 cm^2

42. A vehicle starts at 8 m/s and accelerates uniformly at 2 m/s^2 for 5 s. What is its final speed?

A. 8 m/s

B. 10 m/s

C. 5 m/s

D. 18 m/s

43. Two successive rotations about the same centre are 60° and 150°. What single rotation is equivalent to these two?

A. 60° rotation only

B. 150° rotation only

C. 210° rotation

D. 90° rotation

44. Point A is at (1, 0). After rotation about the origin it moves to (0, 1). What is the angle and direction of rotation?

A. 180° anticlockwise

B. 90° clockwise

C. 90° anticlockwise

D. 270° clockwise

45. What is 3 times the vector (2, -1)?

A. (6, -3)

B. (2, -3)

C. (5, -2)

D. (6, 3)

46. A cyclist covers 4 km in 15 minutes. What is the average speed in km/h?

A. 16 km/h

B. 4 km/h

C. 20 km/h

D. 1 km/h

47. Which pair correctly gives sum and product of roots of x^2 - 7x + 10 = 0?

A. Sum = 10, Product = 7

B. Sum = 7, Product = 10

C. Sum = -10, Product = -7

D. Sum = -7, Product = -10

48. If point P is 5 cm from the centre of rotation and is rotated by 90°, how far is P' (the image) from the centre?

A. 10 cm

B. 5 cm

C. 0 cm

D. 5 cm

49. How is the vector from point A to point B commonly written?

A. vector AB

B. AB (as a number)

C. A + B

D. BA

50. An annular sector has outer radius 15 cm, inner radius 9 cm and central angle 60°. Find its area.

A. 48 cm²

B. 36 cm²

C. 12 cm²

D. 24 cm²