

## F. 2 Mathematics Term 2 Revision (Multiple Choice)

- A motorcycle travels 243 km in 180 minutes. Find its speed.
 

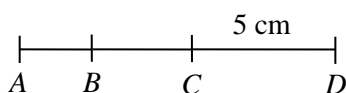
A. 1.35 km/ h	B. 13.5 km/ h
C. 40.5 km/ h	D. 81 km/ h
- Given that  $15 : (x - 2) = 3 : 5$ , find the value of  $x$ .
 

A. 13	B. 17
C. 23	D. 27
- If  $\frac{1}{a} : \frac{1}{b} = 3 : 2$ ,  $a : b =$ 

A. 1 : 2.	B. 3 : 4.
C. 2 : 3.	D. 3 : 2.
- Given that  $5x = 6y$  and  $y : z = 3 : 4$ , find  $x : z$ .
 

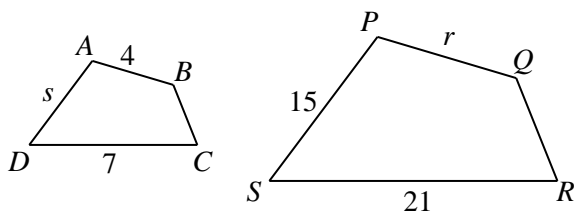
A. 5 : 3	B. 5 : 4
C. 3 : 10	D. 9 : 10
- In a triangle, the three interior angles are in the ratio 2 : 3 : 4. What is the size of the largest angle in the triangle?
 

A. $60^\circ$	B. $80^\circ$
C. $100^\circ$	D. $140^\circ$
- In the figure,  $BC$  is longer than  $AB$  by 1 cm.  $BC : CD = 7 : 10$ . If  $CD = 5$  cm, find  $AB : BC : AD$ .



- |               |               |
|---------------|---------------|
| A. 5 : 7 : 10 | B. 5 : 7 : 22 |
| C. 6 : 7 : 10 | D. 6 : 7 : 23 |

- In the figure,  $ABCD$  and  $PQRS$  are two similar quadrilaterals. Find  $r$  and  $s$ .



- |                    |                    |
|--------------------|--------------------|
| A. $r = 12, s = 5$ | B. $r = 15, s = 5$ |
| C. $r = 12, s = 6$ | D. $r = 15, s = 6$ |

8. Which of the following are identities?

I.  $\frac{1}{d+2} = \frac{1}{d} + \frac{1}{2}$

II.  $(b-2010)^2 = (2010-b)^2$

III.  $(2c+7)^2 = 4c^2 + 28c + 49$

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

9. If  $Ax(3x-1) \equiv -6x^2 + Bx$ , where  $A$  and  $B$  are constants, then

A.  $A = -2, B = -2.$

B.  $A = -2, B = 2.$

C.  $A = 2, B = -2.$

D.  $A = 2, B = 2.$

10. Which of the following expressions have a factor  $a - b$ ?

I.  $am - bm$

II.  $a^2 - b^2$

III.  $a^2 - 2ab + b^2$

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

11. Factorize  $16pqr - 6prs + 4ps$ .

A.  $2(8pqr - 3prs + 2ps)$

B.  $p(16qr - 6rs + 4s)$

C.  $2p(8qr - 3rs + 2s)$

D.  $2r(8pr - 3rs + 2p)$

12. If the side of a square is  $x + 2y$ , its area is

A.  $x^2 + 2y^2.$

B.  $x^2 + 4y^2.$

C.  $x^2 + 2xy + 2y^2.$

D.  $x^2 + 4xy + 4y^2.$

13.  $9a^2b^2 - 30ab^3 + 25b^4 =$

A.  $a^2(3a - 5b)^2$

B.  $b(3a - 5b)^2$

C.  $b^2(3a - 5b)^2$

D.  $b^2(9a - 25b)^2$

14. Simplify  $\frac{1}{x-4} - \frac{2}{3x-12}$ .

A.  $\frac{1}{3}$

B.  $\frac{1}{3(x-4)}$

C.  $-\frac{1}{x-4}$

D. 3

15. Simplify  $\frac{x^2 - x}{4 - 2x} \div \frac{x - 1}{6x - 12}$ .

A.  $-3x$

B.  $3x$

C.  $3(x - 1)$

D.  $\frac{3}{x-1}$

16. Simplify  $\frac{1}{x+1} + \frac{1}{x-1} + \frac{2}{x^2-1}$ .
- A. 0  
B.  $\frac{2}{x+1}$   
C.  $\frac{2}{x-1}$   
D.  $\frac{2}{x^2-1}$
17. Given a formula  $d = \frac{a}{b+c}$ , if  $a = 2$ ,  $b = 3$  and  $d = \frac{1}{5}$ , find the value of  $c$ .
- A. 6  
B. 7  
C. 8  
D. 9
18. If  $\frac{2x+y}{2x-y} = -2$ , then  $x =$
- A.  $\frac{y}{3}$   
B.  $-\frac{y}{3}$   
C.  $\frac{y}{6}$   
D.  $-\frac{y}{6}$
19. Which of the following expressions CANNOT be factorized?
- A.  $x^2 + 9$   
B.  $x^2 - 9$   
C.  $x^3 + 27$   
D.  $x^3 - 27$
20. If  $x^2 - 12x - k$  is a perfect square expression, what is the value of  $k$ ?
- A. -36  
B. -6  
C. 6  
D. 36
21. The L.C.M. of  $4x + 6y$  and  $(3x - 5y)(2x + 3y)$  is
- A.  $(4x + 6y)(3x - 5y)(2x + 3y)$ .  
B.  $2(2x + 3y)(3x - 5y)$ .  
C.  $2(2x + 3y)(3x + 5y)$ .  
D.  $2(2x + 3y)(2x - 3y)(3x + 5y)$ .
22.  $x^3 + 27y^3 =$
- A.  $(x + 3y)^3$   
B.  $(x + 3y)(x^2 - 3xy + 9y^2)$   
C.  $(x - 3y)(x^2 + 3xy + 9y^2)$   
D.  $(x - 3y)(x^2 + 9xy + 9y^2)$
23. Express 0.025 46 m in mm and round off the result correct to 2 significant figures.
- A. 3 mm  
B. 25 mm  
C. 25.5 mm  
D. 255 mm
24. How many '0's are significant figure in 0.030 028 0?
- A. 2  
B. 3  
C. 4  
D. 5
25. In an election, the vote is 579 795. When the vote is rounded off correct to 3 significant figures, the absolute error is
- A. 795.  
B. 205.  
C. 5.  
D. 0.035.

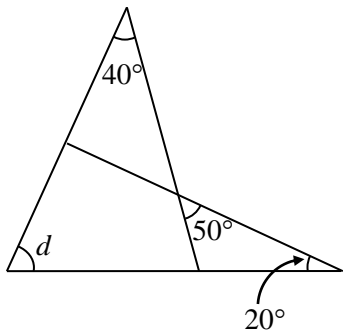
26. The lettuce in a hamburger weighs 50 g, correct to the nearest g. Which of the following is NOT a possible weight of the lettuce?

- A. 49.049 g                      B. 49.51 g  
 C. 50.01 g                        D. 50.45 g

27. Find the percentage error when the number 625 is rounded off to 1 significant figure.

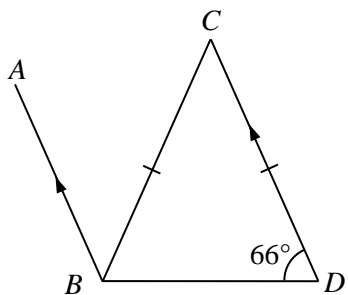
- A. 4%                                B.  $4\frac{1}{6}\%$   
 C.  $4\frac{1}{3}\%$                             D.  $4\frac{2}{3}\%$

28. In the figure, find the value of  $d$ .



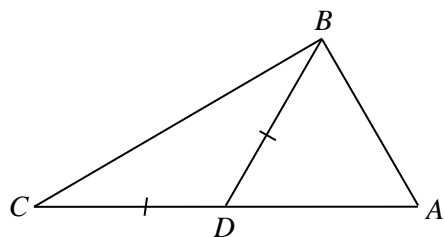
- A.  $30^\circ$                               B.  $50^\circ$   
 C.  $60^\circ$                               D.  $70^\circ$

29. Find  $\angle ABC$  in the figure.



- A.  $24^\circ$                               B.  $48^\circ$   
 C.  $57^\circ$                               D.  $66^\circ$

30. In the figure,  $\triangle ABD$  is an equilateral triangle and  $ADC$  is a straight line. Find  $\angle BCD$ .



- A.  $25^\circ$                               B.  $30^\circ$   
 C.  $35^\circ$                               D.  $40^\circ$



36. The table below shows the time that a group of students spend on playing video games per week.

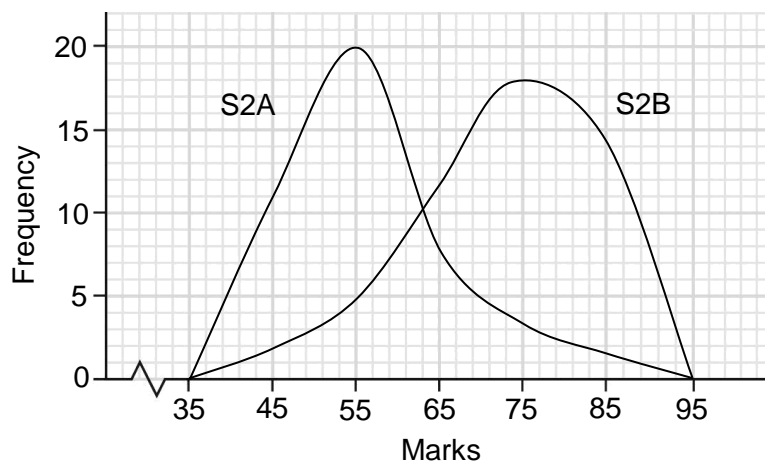
Time less than (hour)	0.5	3.5	6.5	9.5	12.5	15.5
Cumulative frequency	0	40	100	150	195	200

Find the percentage of students who spend between 3.5 hours and 12.5 hours per week on playing video games.

- A. 25%    B. 50%  
C. 77.5%    D. 97.5%

37. The diagram shows the result of S2A and S2B students in a Mathematics test.

**Result of S2A and S2B students in a Mathematics test**

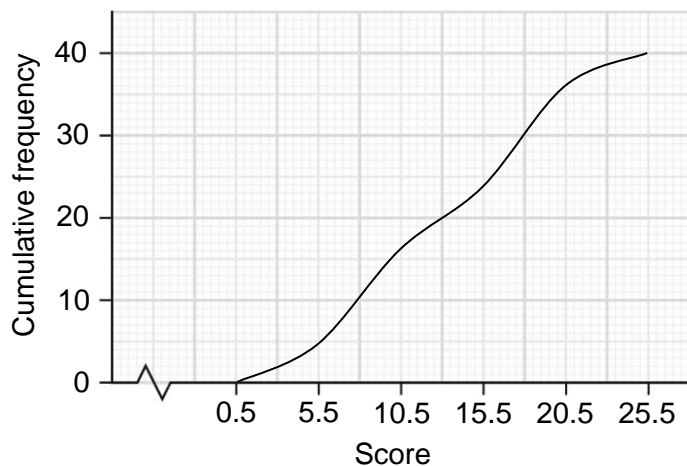


Which of the following statements is/are correct?

- I. S2B students perform better than S2A students in general.  
II. No students in S2A and S2B got a mark lower than 35.  
III. The diagram shows 2 cumulative frequency curves.
- A. II only    B. I and II only  
C. II and III only                                    D. I, II and III

The following cumulative frequency curve shows the scores of a group of contestants in a singing contest.

**Scores of a group of contestants in a singing contest**



Referring to the above graph, answer Q38 and Q39.

38. How many contestants have scores 20.5 or above?

- |       |       |
|-------|-------|
| A. 4  | B. 6  |
| C. 34 | D. 36 |

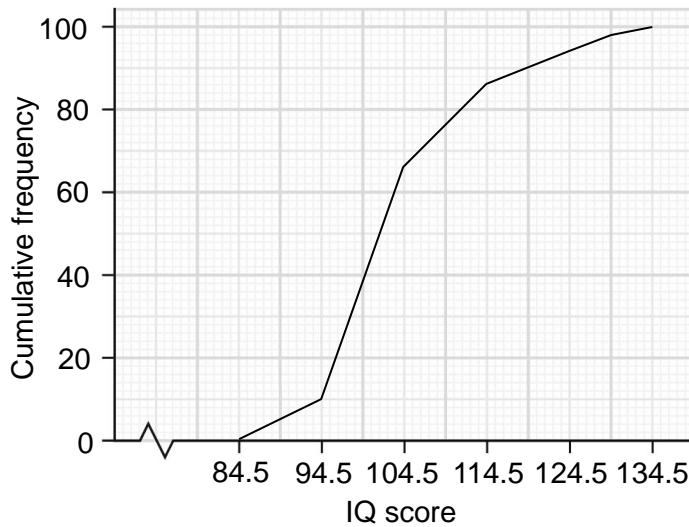
39. Which of the following are correct?

- I. There are 40 contestants in the singing contest.
- II. The 30th percentile is 18.
- III. The difference between the marks corresponding to the upper quartile and the lower quartile is 10.

- |                    |                   |
|--------------------|-------------------|
| A. I and II only   | B. I and III only |
| C. II and III only | D. I, II and III  |

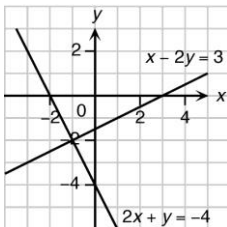
40. The following cumulative frequency polygon shows the IQ scores of 100 students.

**IQ scores of 100 students**



If the top 10% of students will attend an intelligent competition, what is the lowest IQ score for a student to attend the competition?

- A. 111.5
  - B. 114.5
  - C. 119.5
  - D. 124.5
41. Which of the following points lie on the graph of  $x + 3y = 4$ ?
- A.  $(-2, 2)$
  - B.  $(-1, -1)$
  - C.  $(0, 1)$
  - D.  $(1, -1)$
42. The figure below shows the graphs of  $2x + y = -4$  and  $x - 2y = 3$ .



Which of the following is the solution of both the two equations?

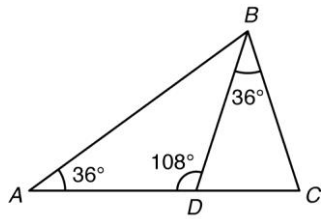
- A.  $x = 1, y = 2$
  - B.  $x = 1, y = -2$
  - C.  $x = -1, y = 2$
  - D.  $x = -1, y = -2$
43. Solve the simultaneous equations  $\begin{cases} x - y = 5 \\ 2x + 3y = -10 \end{cases}$ .
- A.  $x = -5, y = 10$
  - B.  $x = 1, y = -4$
  - C.  $x = 5, y = 0$
  - D.  $x = 25, y = 20$
44. Solve the simultaneous equations  $4x - 3y - 1 = 5x - 4y = 0$ .
- A.  $x = 5, y = 4$
  - B.  $x = 4, y = 5$
  - C.  $x = -4, y = 5$
  - D.  $x = -5, y = 4$
45. Nick is 5 years older than Jerry. If the sum of their ages is 45, how old is Nick?
- A. 15 years old
  - B. 20 years old
  - C. 25 years old
  - D. 30 years old



46. If the point  $(2, a)$  lies on the graphs of  $3x - 4y = 10$  and  $bx + 3y = 1$ , then

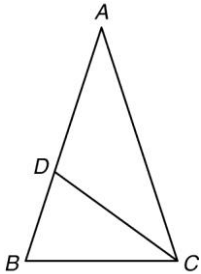
- A.  $a = 1, b = 2$
- B.  $a = -1, b = 2$
- C.  $a = 2, b = -3$
- D.  $a = 3, b = 1$

47. Referring to the figure below, which of the following is / are isosceles triangle(s)?



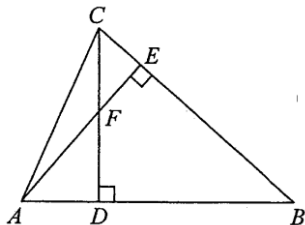
- I.  $\triangle ADB$
  - II.  $\triangle BCD$
  - III.  $\triangle ABC$
- A. I only
  - B. II only
  - C. I and III only
  - D. I, II and III

48. In the figure,  $AB = AC$  and  $BC = DC = DA$ . Find  $\angle BAC$ .



- A.  $30^\circ$
- B.  $36^\circ$
- C.  $64^\circ$
- D.  $72^\circ$

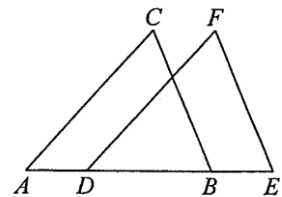
49. In the figure,  $AE$  and  $CD$  intersect at  $F$ . Which of the following must be correct?



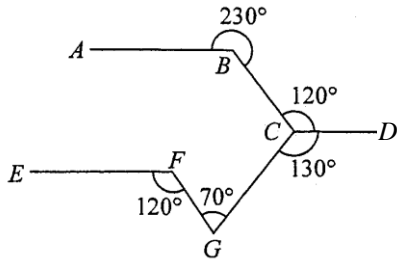
- I.  $\triangle ABE \sim \triangle CBD$
  - II.  $\triangle ADF \sim \triangle CEF$
  - III.  $BD = BE$
- A. I only
  - B. I and II only
  - C. II and III only
  - D. I, II and III

50. In the figure,  $ADBE$  is a straight line. If  $\triangle ABC \cong \triangle DEF$ , which of the following must be correct?

- I.  $AC \parallel DF$
  - II.  $BC \parallel EF$
  - III.  $AD = BE$
- A. I only
  - B. I and II only
  - C. II and III only
  - D. I, II and III



51. Referring to the figure below, which of the following must be correct?

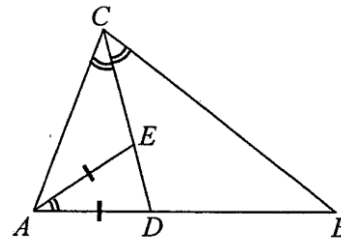


- I.  $AB \parallel CD$
- II.  $CD \parallel EF$
- III.  $BC \parallel FG$

- A. I only
- B. I and II only
- C. II and III only
- D. I, II and III

52. In the figure,  $ADB$  and  $CED$  are straight lines. Which of the following must be correct?

- I.  $\triangle ADE \sim \triangle CDA$
- II.  $\triangle CEA \sim \triangle CDB$
- III.  $\triangle ACD \sim \triangle ABC$



- A. I only
- B. I and II only
- C. I and III only
- D. II and III only

53. Which of the following is NOT a rational number?

- A.  $3\frac{12}{17}$
- B.  $0.\dot{3}$
- C.  $\sqrt{3}$
- D.  $\sqrt{4}$

54. Simplify the expression  $3\sqrt{5} - 2\sqrt{5} + 5\sqrt{2}$ .

- A. 0
- B.  $\sqrt{5} + 5\sqrt{2}$
- C.  $3\sqrt{5} + 3\sqrt{2}$
- D.  $8\sqrt{2} - 2\sqrt{5}$

55. Simplify the expression  $(\sqrt{12} + \sqrt{27})\sqrt{3}$ .

- A. 5
- B. 15
- C.  $\sqrt{93}$
- D.  $\sqrt{117}$

56. Simplify the expression  $\frac{\sqrt{0.48} \times \sqrt{0.5}}{\sqrt{0.75}}$ .

- A.  $\frac{2\sqrt{2}}{5}$
- B. 0.6
- C.  $\frac{4}{5}$
- D.  $\frac{4\sqrt{2}}{5}$

57. Simplify  $(3\sqrt{2} + 1)(2\sqrt{2} + 3)$ .

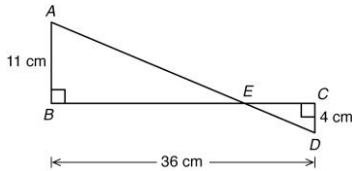
A.  $3 + 6\sqrt{2}$

B.  $4 + 5\sqrt{2}$

C.  $12 + 5\sqrt{2}$

D.  $15 + 11\sqrt{2}$

58. In the figure, find the length of  $AD$ .



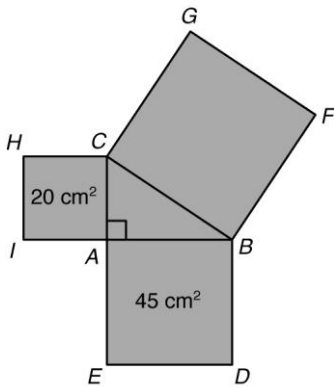
A. 28 cm

B. 32 cm

C. 39 cm

D. 47 cm

59. The figure shows 3 squares  $ABDE$ ,  $ACHI$  and  $BFGC$ , and a right-angled triangle  $ABC$ . If the area of  $ACHI$  is  $20 \text{ cm}^2$  and that of  $AEDB$  is  $45 \text{ cm}^2$ , what is the area of the whole shaded region  $AEDBFGCHI$ ?



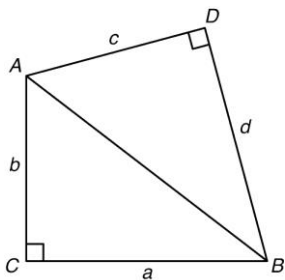
A.  $130 \text{ cm}^2$

B.  $145 \text{ cm}^2$

C.  $160 \text{ cm}^2$

D. Cannot be determined

60. The figure shows 2 right-angled triangles  $ABC$  and  $ABD$  with sides as shown. Which of the following is true?



A.  $a + b = c + d$

B.  $a - c = b - d$

C.  $(a - c)(a + c) = (d - b)(d + b)$

D.  $(a + b)^2 = (c + d)^2$

61. If the area of a square is  $a \text{ cm}^2$ , what is the length of its diagonal?

A.  $\sqrt{a} \text{ cm}$

B.  $\sqrt{2a} \text{ cm}$

C.  $\frac{\sqrt{a}}{2} \text{ cm}$

D.  $\sqrt{\frac{a}{2}} \text{ cm}$

62. If  $a$  and  $b$  are positive numbers, which of the following can be the lengths of the sides of a right-angled triangle?

I.  $8a, 17a, 15a$

II.  $\sqrt{a}, \sqrt{b}, \sqrt{a^2 + b^2}$

III.  $\sqrt{a}, \sqrt{b}, \sqrt{a+b}$

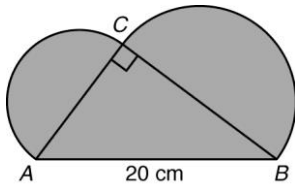
A. I only

B. II only

C. I and II only

D. I and III only

63. In the figure, the ratio of the diameters of the larger semi-circle to that of the smaller semi-circle is  $4 : 3$ . Find the area of the figure.



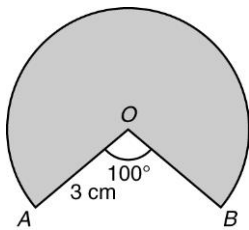
A.  $100\pi \text{ cm}^2$

B.  $200\pi \text{ cm}^2$

C.  $(28\pi + 96) \text{ cm}^2$

D.  $(50\pi + 96) \text{ cm}^2$

64. In the figure,  $O$  is the centre of the sector  $AOB$ . Find the area of the sector, correct to 3 significant figures.



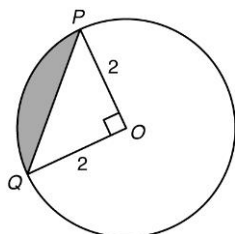
A.  $5.24 \text{ cm}^2$

B.  $7.85 \text{ cm}^2$

C.  $13.6 \text{ cm}^2$

D.  $20.4 \text{ cm}^2$

65. In the figure,  $O$  is the centre of the circle. Find the perimeter of the shaded region, correct to 2 decimal places.



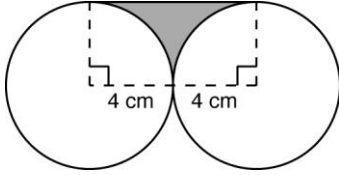
A. 1.14 cm

B. 4.57 cm

C. 5.97 cm

D. 8.89 cm

66. The figure shows 2 identical circles. Find the area of the shaded region in terms of  $\pi$ .



- A.  $4\pi \text{ cm}^2$
- B.  $8\pi \text{ cm}^2$
- C.  $4(3 - \pi) \text{ cm}^2$
- D.  $8(4 - \pi) \text{ cm}^2$

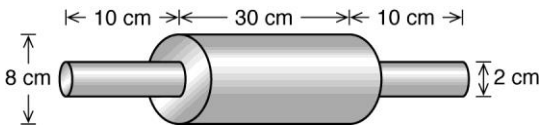
67. The radius and the capacity of a cylindrical glass are 6 cm and  $576\pi \text{ cm}^3$  respectively. At the beginning, it is half filled with water. Now 9 identical marbles, each of volume  $5\pi \text{ cm}^3$ , are put into the glass. If the marbles are completely immersed in water and water does not overflow, find the new depth of water in the glass.

- A. 1.25 cm
- B. 5.25 cm
- C. 9.25 cm
- D. 16.25 cm

68. A metal cube of side 5 cm is melted and recast to form a cylinder of height of 3 cm. What is the base radius of the cylinder? Give your answer correct to 3 significant figures.

- A. 3.64 cm
- B. 4.42 cm
- C. 6.45 cm
- D. 13.3 cm

69. The figure shows a rolling pin made of 3 wooden cylinders. The length and the base diameter of the 2 identical handles at both sides are 10 cm and 2 cm respectively, while the length and the base diameter of the middle cylinder are 30 cm and 8 cm respectively. Find the total surface area of the rolling pin.

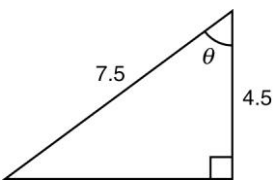


- A.  $310\pi \text{ cm}^2$
- B.  $312\pi \text{ cm}^2$
- C.  $314\pi \text{ cm}^2$
- D.  $316\pi \text{ cm}^2$

70. In  $\triangle PQR$ ,  $PQ = 5 \text{ cm}$ ,  $PR = 10 \text{ cm}$  and  $\angle Q = 90^\circ$ . Find  $\angle R$ .

- A.  $30^\circ$
- B.  $45^\circ$
- C.  $60^\circ$
- D.  $75^\circ$

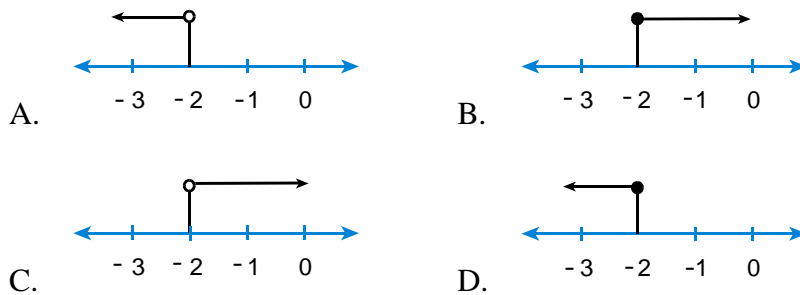
71. Find  $\cos \theta$  in the figure.



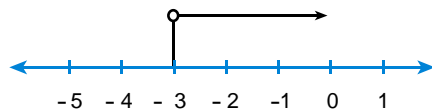
- A. 0.75
- B. 0.45
- C.  $\frac{3}{5}$
- D.  $\frac{4}{3}$



77. Which of the following figures represents all numbers greater than  $-2$ ?



78. Which of the following cannot be a solution of the inequality represented by the following figure?



- A.  $x = -2$       B.  $x = 0$       C.  $x = -1$       D.  $x = -3$

79. Which of the following is equivalent to the inequality  $x > 5$ ?

- A.  $x + 3 > 8$       B.  $x - 3 < 2$       C.  $-3x > -15$       D.  $x + 3 < 8$

80. If  $a < b$ , which of the following must be correct?

- A.  $a - 3 > b - 3$       B.  $a - 3 = b - 3$   
 C.  $a - 3 \leq b - 3$       D.  $a - 3 < b - 3$

81. If  $a > b$ , which of the following must be correct?

- A.  $-2a > -2b$       B.  $-2a = -2b$       C.  $-2a < -2b$       D.  $-2a \geq -2b$

82. Given that  $a > b$  and  $\frac{a}{c} < \frac{b}{c}$ , which of the following is a possible value of  $c$ ?

- A. 1      B.  $-1$       C.  $a^2$       D.  $b^2$

83. There are 25 boys in S1A. If the number of boys is at least 6 more than that of girls, at most how many girls are there in S1A?

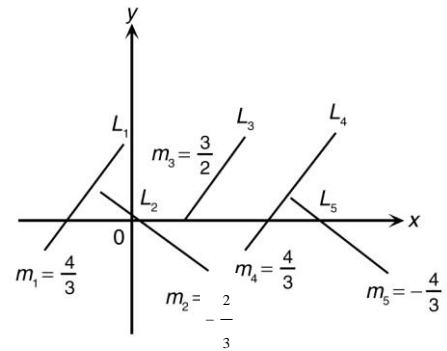
- A. 18      B. 19      C. 20      D. 31

84. For two consecutive numbers, the sum of the smaller number and twice of the larger number is not less than 48. Find the minimum value of the larger number.

- A. 15      B. 16      C. 17      D. 18

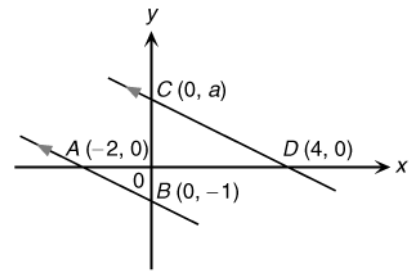
85. In the figure,  $m_1, m_2, m_3, m_4$  and  $m_5$  represent the slopes of  $L_1, L_2, L_3, L_4$  and  $L_5$  respectively. Which of the following must be true?

- I.  $L_1 \parallel L_3$
  - II.  $L_2 \perp L_3$
  - III.  $L_4 \perp L_5$
- A. I only
  - B. II only
  - C. I and II only
  - D. I and III only



86. In the figure,  $AB \parallel CD$ . Find the value of  $a$ .

- A. 4
- B. 2
- C.  $\frac{1}{2}$
- D.  $\frac{1}{4}$



87. It is given that the coordinates of  $A$  and  $B$  are  $(-2, 20)$  and  $(-7, 2)$  respectively. Find the slope of the reflection of  $AB$  about the  $y$ -axis.
- A.  $-3.2$
  - B.  $-3.4$
  - C.  $-3.6$
  - D.  $-3.8$

88. Referring to the figure,  $OABC$  is a rectangle.  $N$  is a point on  $OC$  such that  $ON : NC = 3 : 2$ .  $M$  is a point on  $AB$  such that  $OM \parallel NB$ . Which of the following must be true?

- I. Coordinates of  $M = \left(a, \frac{2c}{5}\right)$
  - II. Coordinates of  $N = \left(0, \frac{3c}{5}\right)$
  - III.  $AM : MB = 3 : 2$
- A. II only
  - B. III only
  - C. I and II only
  - D. I and III only

