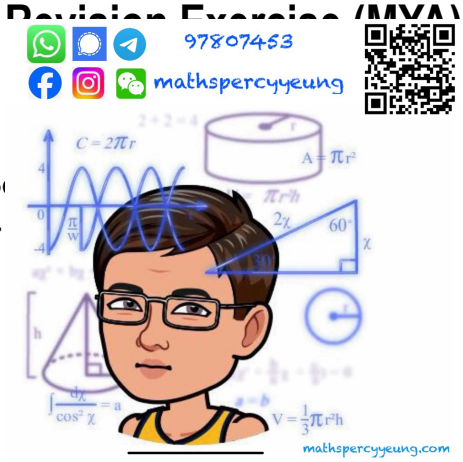
G11 MATHEMATICS

Revision Exercise (MYA)



There are 30 questions in S[illegible]on B.

The diagrams in this paper [illegible].

Section A

1. $\dfrac{a^{4x}}{4^{4x}a^4} =$

   A. $\dfrac{1}{4^4}$.

   B. $\dfrac{a^{4x-4}}{2^{8x}}$.

   C. $\dfrac{a^x}{4^{4x}}$.

   D. $\dfrac{1}{4a^3}$.

2. If $p+\dfrac{m}{p}=m$, then $m=$

   A. $p-p^2$.

   B. $\dfrac{p-1}{p^2}$.

   C. $\dfrac{p^2}{p-1}$.

   D. $\dfrac{p^2}{1-p}$.

3. Factorize $a^2+b^2+2ab-c^2$.

   A. $(a+b+c)(a+b-c)$

   B. $(a-b-c)(a-b+c)$

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

   D. $(a-b+c)(a+b-c)$

4. The price of some pork first increases by 20% and then decreases by 20%. If its new price is \$48, find the original price of the pork.

   A. \$47

   B. \$48

   C. \$49

   D. \$50

5. In a three-digit number, the sum of units digit and hundreds digit is 8. If these two digits are reversed, the value of the number is increased by 396. The hundreds digit of the original number is

A. 1.
B. 2.
C. 3.
D. 4.

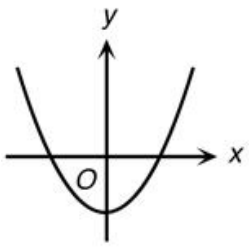
6. If $(x+a)^2 = 9(x-a)^2$, then $x =$

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

7. If α^2 is a real root of the equation $x^2 - 4x - k^2 + 4 = 0$, where k is a positive real number, then $\alpha^2 - 2 + k =$

A. $2k$.
B. 0.
C. 0 or $2k$.
D. $-2k$.

8. It is given that $p < -2$. Which of the following may represent the graph of $y = x^2 + px + 1$?

A.


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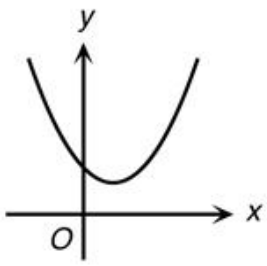

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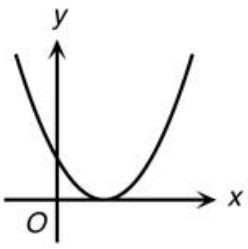
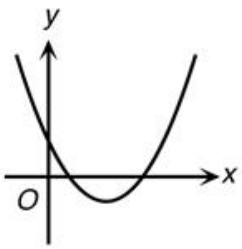


D.


9. If $\begin{cases} x^2+x+a+3=0 \\ y^2+y+a+3=0 \end{cases}$ and $x-y=5$, then $a=$

A. -9.

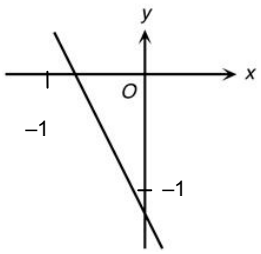
B. -6.

C. 3.

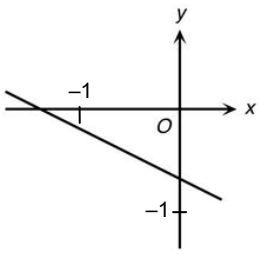
D. 6.

10. If $b>c>a>0$, which of the following may represent the graph of the straight line $L: ax+by+c=0$?

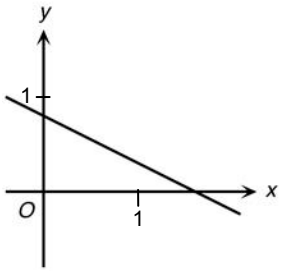
A.



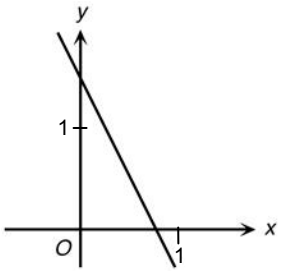
B.



C.



D.



11. If $\mathrm{f}(n)=n+\dfrac{1}{n}$, find $\mathrm{f}(\dfrac{1}{n})\times\mathrm{f}(-n)$.

A. 0

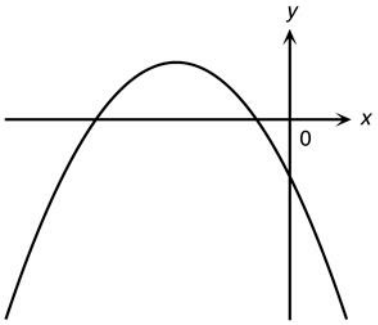
B. $-\left(n^2+\dfrac{1}{n^2}\right)$

C. $-\left(2+n^2+\dfrac{1}{n^2}\right)$

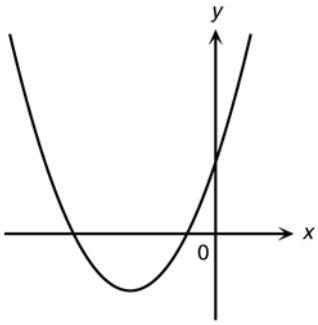
D. -2

12. Which of the following may represent the graph of $y = a(x+b)^2 + c$, where $ac > 0$?

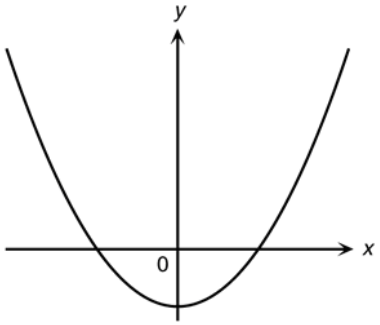
A.



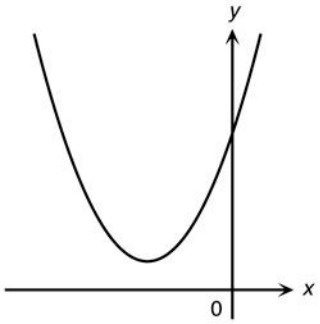
B.



C.



D.



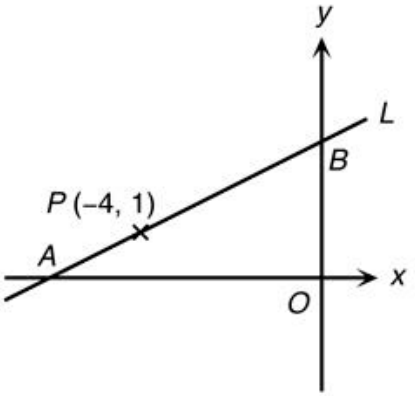
13. In the figure, the straight line L cuts the x-axis and the y-axis at A and B respectively. If L passes through $P(-4, 1)$ and $AO = 2OB$, find the equation of L.

A. $x - 2y + 6 = 0$

B. $x - 2y - 6 = 0$

C. $2x - y + 9 = 0$

D. $2x - y + 7 = 0$



14. If $\dfrac{x+1}{(x+2)(x+3)} \equiv \dfrac{B}{x+2} + \dfrac{C}{x+3}$, then

A. $B = 1$ and $C = 2$.

B. $B = -1$ and $C = -2$.

C. $B = 1$ and $C = -2$.

D. $B = -1$ and $C = 2$.

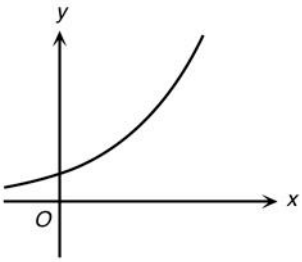
15. It is given that when a polynomial $\mathrm{P}(x)$ is divided by $2(x-10)$, the remainder is 10 . Find the remainder when $\mathrm{P}(x)$ is divided by $(-x+10)$.

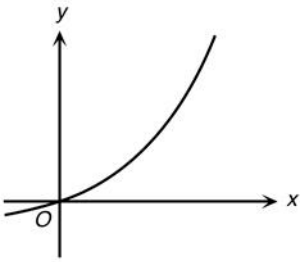
A. -20
B. -10
C. 10
D. 20

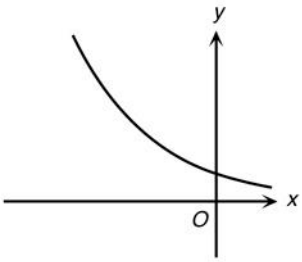
16. If $8^x = 2y$, then $4^{3x} =$

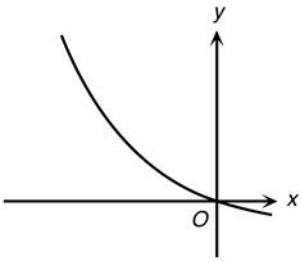
A. $4y^2$.
B. y^3.
C. $\frac{y^2}{4}$.
D. $4^{\frac{3y}{4}}$.

17. Which of the following may represent the graph of $y = 2^{-x} - 1$?

A.


B.


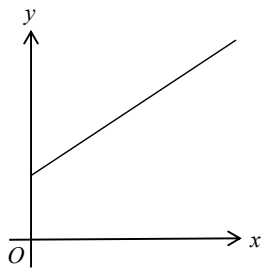
C.


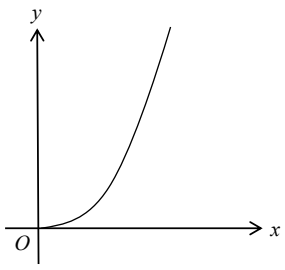
D.


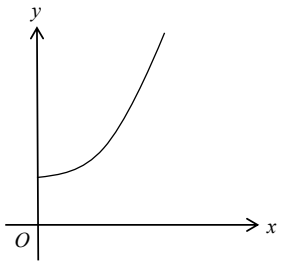
18. Solve $\log_2 x^3 = (\log_2 x)^2 - 4$.

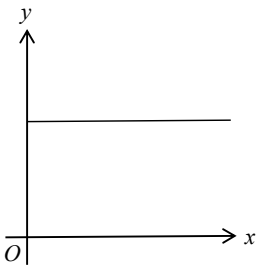
A. $x = -1$ or $x = 4$
B. $x = \frac{1}{2}$ or $x = 16$
C. $x = 4$
D. $x = 16$

19. It is given that y is partly constant and partly varies directly as x. Which of the following graphs may show this relation?

A. 

B. 

C. 

D. 

20. The value (\$$V$) of a metal sphere varies directly as the surface area of the sphere. It is given that the radii of two metal spheres are in the ratio 1 : 2. If the value of the smaller sphere is \$2 020, then the value of the larger sphere is
    A. \$4 040.
    B. \$6 060.
    C. \$8 080.
    D. \$16 160.

21. Find the maximum and minimum values of the function $y = \dfrac{3}{2 - \cos^2(x + 1°)}$ for $0° \le x \le 360°$.

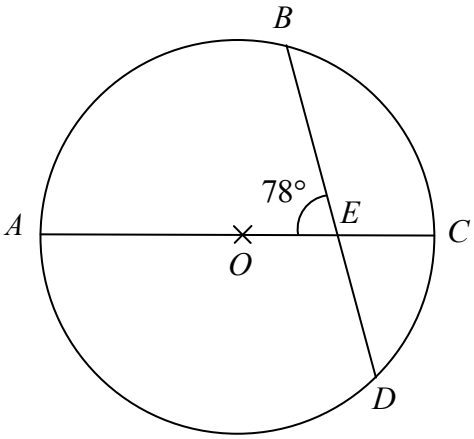
	Maximum value	Minimum value
A.	3	1
B.	3	$\frac{3}{2}$
C.	2	1
D.	$\frac{3}{2}$	1

22. $\dfrac{\sin(90°-\theta)+\sin(90°+\theta)\cos(270°+\theta)}{1-\sin(180°+\theta)} =$

A. $2\cos\theta$.
B. $\tan\theta+\sin\theta$.
C. $1+\sin\theta$.
D. $\cos\theta$.

23. In the figure, O is the centre of the circle. Diameter AC and chord BD intersect at E. If $\angle BEA = 78°$ and $\overset{\frown}{AB} : \overset{\frown}{BC} = 3:2$, find $\overset{\frown}{DC} : \overset{\frown}{AB}$.

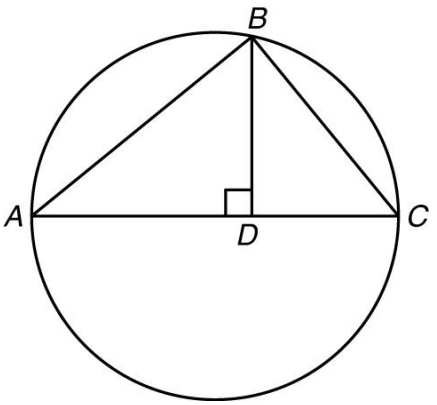
A. $1:2$
B. $4:9$
C. $2:3$
D. $3:5$



24. In the figure, AC is a diameter of the circle. D is a point on AC such that $BD \perp AC$.

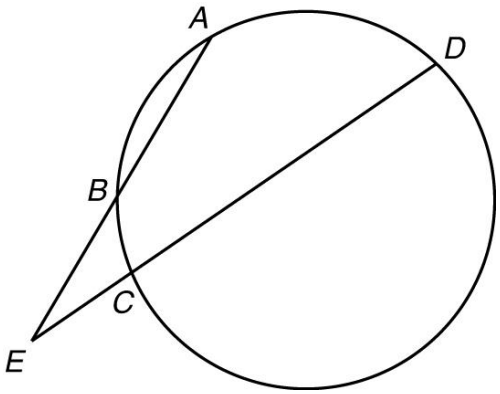
If $AD \cdot DC = 9\,\text{cm}^2$, find the length of BD.

A. 2 cm
B. 2.5 cm
C. 3 cm
D. Cannot be determined



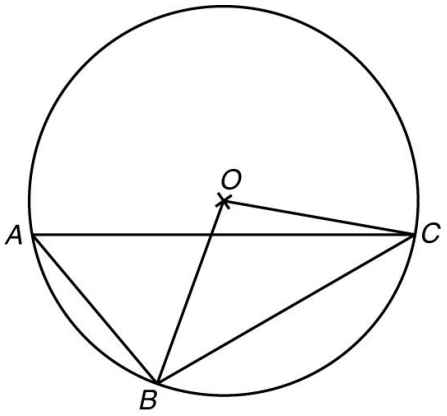
25. In the figure, ABE and DCE are straight lines. If $AD = 2BC$ and $BE = 10\,\text{cm}$, find the length of DE.

A. 20 cm
B. 25 cm
C. 28 cm
D. 30 cm



26. In the figure, O is the centre of the circle, $\overset{\frown}{AB} = \overset{\frown}{BC}$ and $\angle OCA = 20°$. Find $\angle OBA$.

A. 40°
B. 45°
C. 50°
D. 55°



27. The solutions of ' $5x \le 2 - x$ or $x + 11 < 0$ ' are

A. $x \le \frac{1}{3}$.
B. $x < -11$.
C. $-11 < x \le \frac{1}{3}$.
D. all real values of x.

28. How many integral solutions does the compound inequality ' $\frac{5(x-1)}{-2} \ge -10$ and $\frac{x}{2} > -\frac{3x}{2} + 2$ ' have?

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

29. Solve the quadratic inequality $a^2(x+a)^2 \le 0$, where a is a constant.

A. $x \le -a$
B. $x = -a$
C. $x \ge -a$
D. no solutions

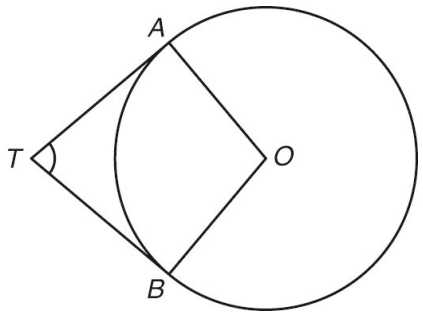
30. The length of a square is x cm, and its area does not exceed 4 cm^2. Find the range of values of x.

A. $-2 \le x \le 2$
B. $0 < x \le 2$
C. $x \le -2$ or $x \ge 2$
D. $x > 2$

Section B

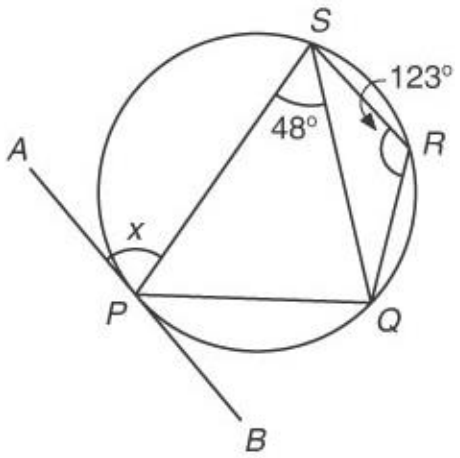
31. In the figure, O is the centre of the circle, TA and TB are tangents to the circle at A and B respectively. It is given that the radius of the circle is 18 cm and $\angle ATB = 80°$. Find the length of the major arc AB.

A. 20π cm
B. 22π cm
C. 24π cm
D. 26π cm



32. In the figure, AB is the tangent to the circle at P. If $\angle SRQ = 123°$ and $\angle PSQ = 48°$, find x.

A. 75°
B. 76°
C. 77°
D. 78°

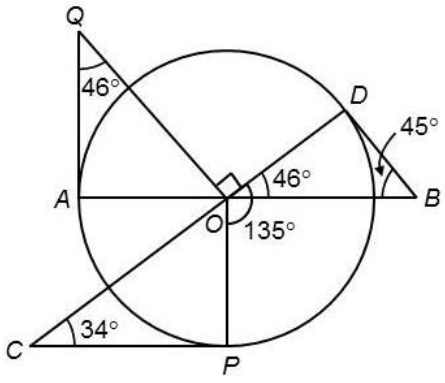


33. In the figure, AB intersects CD at the centre O of the circle. Which of the following is/are the tangent(s) to the circle?

I. BD

II. CP

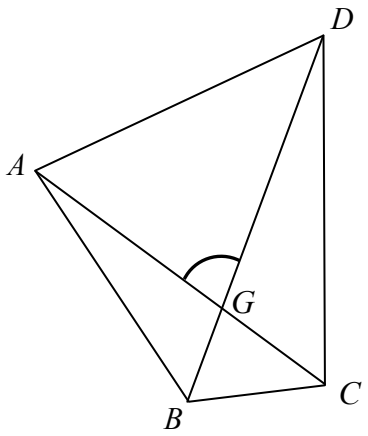
III. QA



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

34. In the figure, AC and BD intersect at G. It is given that $\angle ABC = 120°$, $\angle ADC = 60°$, $\angle CAB = 30°$ and $\angle CAD = 57°$, find $\angle AGD$.

A. $91°$
B. $92°$
C. $93°$
D. $94°$

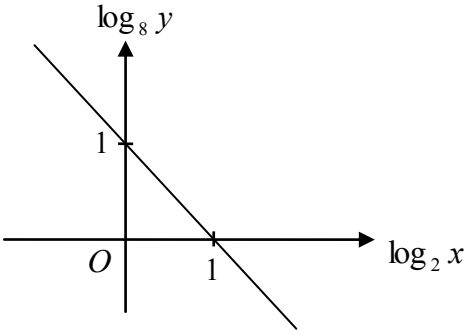


35. If the graph of $y = x^2 + 2ax + a$ has two x-intercepts, find the range of values of a.

A. $0 < a < 1$
B. $a < 0$ or $a > 1$
C. $a > 0$
D. $a > 1$

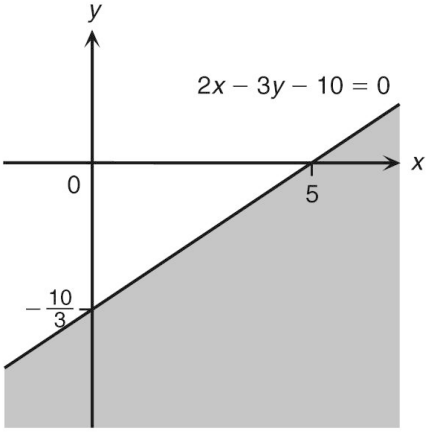
36. The graph in the figure shows the linear relation between $\log_2 x$ and $\log_8 y$. If $y = mx^n$ then $n =$

A. -3.
B. $\frac{1}{3}$.
C. 8.
D. $\frac{1}{8}$.



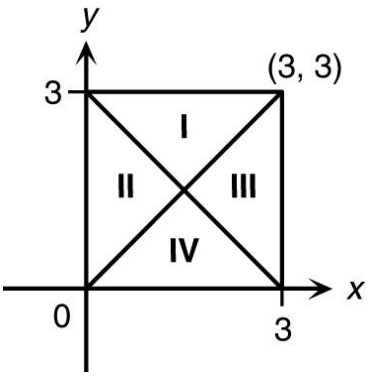
37. Which of the following inequalities has its solutions represented by the shaded region in the figure?

A. $2x - 3y \le -10$
B. $2x - 3y \ge -10$
C. $2x - 3y \le 10$
D. $2x - 3y \ge 10$



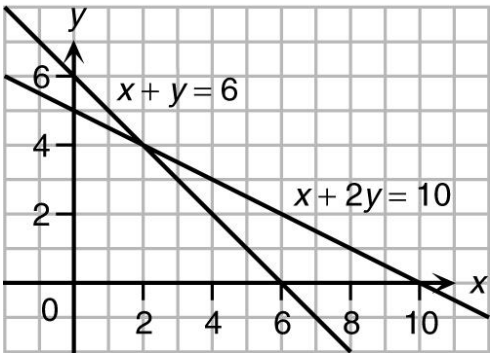
38. Which of the regions in the figure may represent the solutions of $\begin{cases} y \le 3 \\ x + y \ge 3 \\ x - y \le 0 \end{cases}$?

A. Region I
B. Region II
C. Region III
D. Region IV



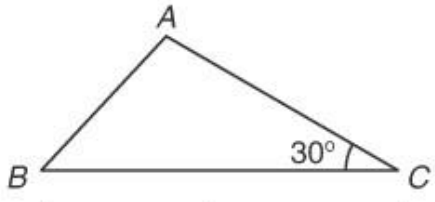
39. Find the maximum value of $P = 2x + y$ subject to the constraints $\begin{cases} x \ge 0 \\ y \ge 0 \\ x + 2y \le 10 \\ x + y \le 6 \end{cases}$.

A. 6
B. 8
C. 12
D. 16



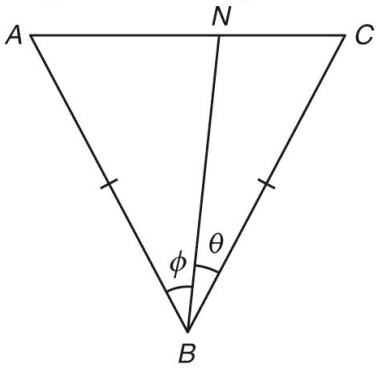
40. In the figure, $BC = 11\,\text{m}$ and the area of $\triangle ABC$ is 8.25 m^2. Find the length of AC.

A. 4 m
B. 3 m
C. 1.5 m
D. 0.5 m



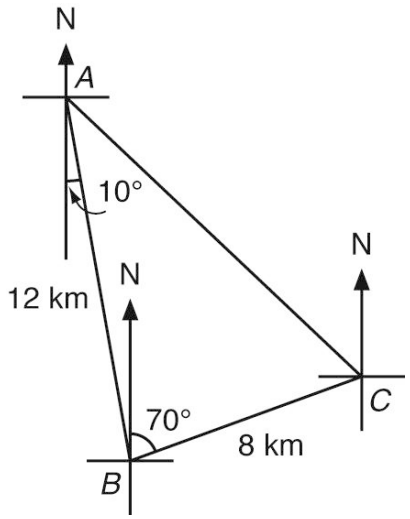
41. The figure shows an isosceles triangle ABC with $AB = CB$. Find $AN : NC$.

A. $\sin\theta : \sin\phi$
B. $\sin\phi : \sin\theta$
C. $\cos\phi : \cos\theta$
D. $1 : \sin\theta \sin\phi$



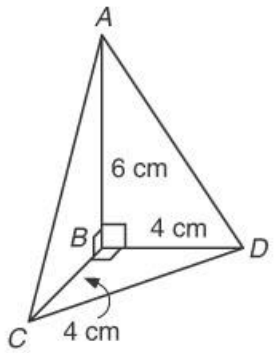
42. In the figure, find the compass bearing of A from C, correct to the nearest 0.1°.

A. S63.4°E
B. S46.6°E
C. N63.4°W
D. N46.6°W



43. In the figure, $ABCD$ is a tetrahedron, where $\angle ABC = \angle ABD = \angle CBD = 90°$, $AB = 6$ cm and $BC = BD = 4$ cm. Find the angle between the planes ACD and BCD, correct to the nearest degree.

A. 65°
B. 56°
C. 45°
D. 35°



END OF REVISION