CXC (CSEC) MATHEMATICS MAY 2011 BOOTCAMPS

WORKOUT 5C – Measurement, Problem Solving

PAPER 2 (Structured)

MEASUREMENT

#1 – June 2008 #5	**#10 – Jan 2009 #5**
#2 – June 2007 #4	**#11 – Jan 2008 #4**
#3 – June 2005 #4	**#12 – Jan 2007 #7**
#4 – June 2004 #7	
#5 – June 2003 #6	
#6 – June 2002 #4b	
#7 – June 2001 #7	
#8 – June 2000 #6	
#9 – June 1999 #8	

PROBLEM SOLVING

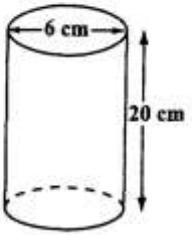
#1 – June 2008 #8
#2 – June 2007 #8
#3 – June 2006 #8
#4 – June 2005 #8
#5 – June 2004 #8
#6 – June 2003 #8
#7 – Jan 2009 #8
#8 – Jan 2008 #8
#9 – Jan 2007 #8

PAPER 1– (Multiple Choices)

1. A rectangular picture frame has a border area of 32 cm². Given that the external dimensions are 10 cm x 8 cm, what are the MOST likely dimensions of the picture?

(A) 8 cm × 6 cm
(B) 8 cm × 4 cm
(C) 8 cm × 10 cm
(D) 8 cm × 14 cm

2. The diagram below shows a cylinder with diameter 6 cm and height 20 cm.



The volume, in cm³, of the cylinder is

(A) 180 π
(B) 240 π
(C) 360 π
(D) 720 π

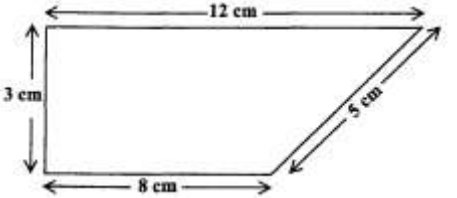
3. The distance around the edge of a circular pond is 88 m. The radius, in metres, is

(A) 176π
(B) 88π
(C) $\frac{88}{\pi}$
(D) $\frac{88}{2\pi}$

4. 2500 millimetres expressed in metres is

(A) 0.25
(B) 2.5
(C) 25
(D) 250

Item 5 refers to the trapezium below.



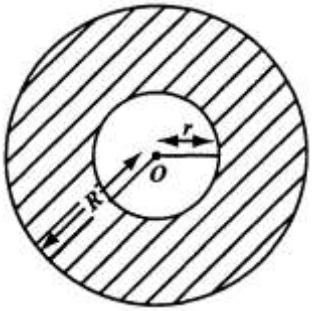
5. The area of the trapezium above is

(A) 24 cm²
(B) 28 cm²
(C) 30 cm²
(D) 36 cm²

6. A motorist travelled 60 km in 1 hour and a further 90 km in 2 hours. His average speed, in km/hr, for the entire journey was

(A) 30
(B) 50
(C) 75
(D) 150

Item 7 refers to the following diagram.



7. The diagram shows two concentric circles centre O with radius r cm and R cm. The area, in cm², of the shaded region is

(A) πR^2
(B) πr^2
(C) $\pi R^2 - \pi r^2$
(D) $\pi r^2 - R^2$

8. The area of a triangle is 30 cm² and its base is 10 cm. What is the perpendicular height, in cm, of the triangle?

(A) 6
(B) 12
(C) 13
(D) 17

9. Tom leaves town P to drive to town Q, which is 595 km away, at 0600 hrs. He arrives in town Q at 1300 hrs the same day. Tom's average speed was

(A) 70 km/h
(B) 75 km/h
(C) 85 km/h
(D) 90 km/h

10. The volume of a cube with edges 10 cm is

(A) 30 cm³
(B) 100 cm³
(C) 300 cm³
(D) 1000 cm³

11. 2500 millimetres expressed in metres is

(A) 0.25
(B) 2.5
(C) 25
(D) 250

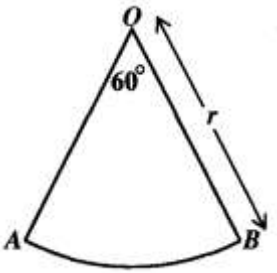
12. The lengths of the sides of a triangle are x, $2x$ and $2x$ centimetres. If the perimeter is 20 centimetres, what is the value of x?

(A) 10
(B) 8
(C) 5
(D) 4

13. A car travels 80 kilometres in 2½ hours. What is its speed in kilometres per hour?

(A) 6
(B) 32
(C) 82.5
(D) 200

Item 14 refers to the diagram below.



14. AOB is a sector of a circle such that angle $AOB = 60°$ and OB is r units long. The area of AOB is

(A) $\frac{1}{3}\pi r$
(B) $\frac{1}{6}\pi r$
(C) $\frac{1}{3}\pi r^2$
(D) $\frac{1}{6}\pi r^2$

15. Fifty guests each had 2 glasses of champagne. Each glass held 150 millilitres. How many litres of champagne were used?

(A) 0.15
(B) 1.5
(C) 15
(D) 150

16. The area of a rectangle is 53.6 cm². If the length is multiplied by four and the width is halved, the area would then be

(A) 26.8 cm²
(B) 53.6 cm²
(C) 107.2 cm²
(D) 214.4 cm²

17. A boy leaves home at 09:15 hours and arrives at school at 10:05 hours. If he travels non-stop at an average speed of 6 kmh^{-1}, how many km is his home from school?

(A) 2 km
(B) 5 km
(C) 6 km
(D) 9 km

Item 18 refers to the following diagram.

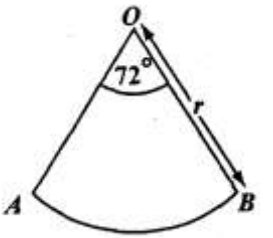
18. The sides of a triangle are x cm, $(x - 1)$ cm and $(x + 2)$ cm. If the perimeter is 31 cm, then the SHORTEST side is

(A) 9
(B) 10
(C) 11
(D) 12

19. The mass, in kg, of a bag of rice is given as 0.6 kg **correct to 1 decimal place**. The range of values in which the actual mass lies is

(A) $10.5 < m < 10.7$
(B) $10.55 < m < 10.64$
(C) $10.59 < m < 10.69$
(D) $10.55 < m < 10.65$

Item 20 refers to the following diagram.



20. AOB is a sector of a circle such that angle $AOB = 72°$ and OB is r units long. The area of AOB is

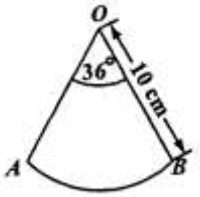
(A) $\frac{1}{5}\pi r$

(B) $\frac{2}{5}\pi r$

(C) $\frac{1}{5}\pi r^2$

(D) $\frac{2}{5}\pi r^2$

Item 21 refers to the following diagram.



21. In the figure above, O is the centre of a circle of radius 10 cm and angle AOB is 36°. What is the length, in cm, of the arc AB?

(A) 2π
(B) 4π
(C) 20π
(D) 24π

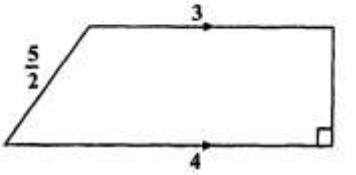
22. The circumference of a circle is 132 cm. Given that $\pi = \frac{22}{7}$, the radius of the circle is

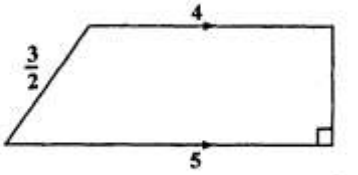
(A) 42
(B) 21
(C) $\sqrt{42}$
(D) $\sqrt{21}$

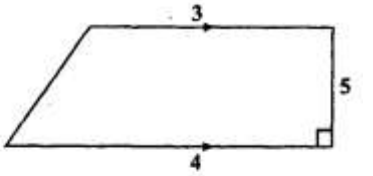
23. A man leaves home at 22:15 hrs and reaches his destination in the same time zone at 04:00 hrs on the following day. How many hours did the journey take?

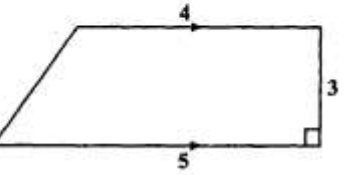
(A) 5
(B) $5\frac{3}{4}$
(C) 6
(D) $6\frac{1}{4}$

24. Which of the figures below has an area equa to $\frac{1}{2}(3+4)5$ square units?

(A)


(B)


(C)


(D


June 2005

25. The volume of a cube of edge 10 cm is

(A) 30 cm^3
(B) 100 cm^3
(C) 300 cm^3
(D) 1000 cm^3

26. How many kilometres will a car travel in t hours at a rate of v km per hour?

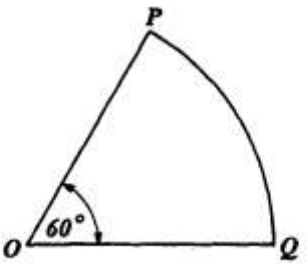
(A) tv

(B) $\frac{v}{t}$

(C) $\frac{t}{v}$

(D) $\frac{v}{60t}$

27.



The figure above, not drawn to scale, shows a sector of a circle centre O. The length of the minor arc PQ is 8 cm. What is the length of the circumference of the circle?

(A) 16 cm
(B) 24 cm
(C) 48 cm
(D) 64 cm

28. On leaving Trinidad, the time on a pilot's watch was 23:00 h. When he arrived at his destination in the same time zone, the next day, his watch showed 03:00 h. How many hours did the flight take?

(A) 4
(B) 16
(C) 20
(D) 26

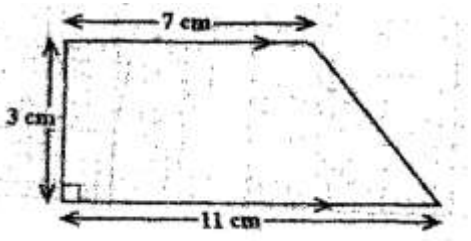
29. An aircraft leaves A at 16:00 h and arrives at B at 19:30 h, the same day, travelling at an average speed of 550 kilometres per hour. A and B are in the same time zone. The distance from A to B in kilometres is about

(A) 907.5
(B) 962.5
(C) 1815
(D) 1925

30. A cylindrical bar of soap 5 cm thick has a volume of 200 cm^3. A uniform slice 3 cm thick was taken away. What volume of the soap remains?

(A) 80 cm^3
(B) 120 cm^3
(C) 300 cm^3
(D) 400 cm^3

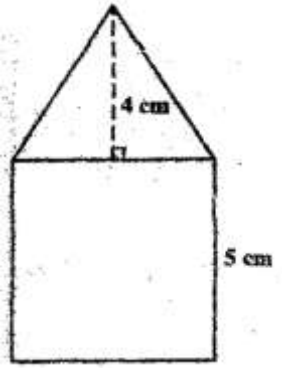
Item 31 refers to the following diagram



31. The area, in cm^2, of the trapezium above **(not drawn to scale)** is

(A) 21
(B) 27
(C) 33
(D) 54

Item 32 refers to the following diagram



33. The figure above, **not drawn to scale**, consists of a triangle resting on a square of side 5 cm. The height of the triangle is 4 cm. What is the TOTAL area of the figure?

(A) 35 cm^2
(B) 45 cm^2
(C) 50 cm^2
(D) 100 cm^2

34. How many kilograms are there in one tonne?

(A) 10
(B) 100
(C) 1000
(D) 10000

35. If it took a speed-boat 9 hours to travel a distance of 1080 km, what was its average speed in km/h?

(A) 12 km/h
(B) 102 km/h
(C) 120 km/h
(D) 1200 km/h

36. A man started a journey at 09:30 hrs and arrived at his destination in the same time zone at 13:30 hrs the same day. If his average speed was 30 km/h, then the distance in km for the journey was

(A) 120
(B) 133
(C) 400
(D) 430

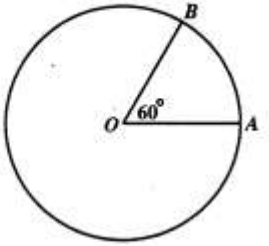
37. If it took a speed-boat 9 hours to travel a distance of 1080 km, what was its average speed?

(A) 12 km/h
(B) 102 km/h
(C) 120 km/h
(D) 1200 km/h

38. A school day starts at 08:50 hrs. and ends at 15:00 hrs. There are two breaks. One lasting 20 minutes and the other 1 hour. How much time is devoted to school activities?

(A) 2 hrs. 30 mins.
(B) 4 hrs. 30 mins.
(C) 5 hrs. 30 mins.
(D) 6 hrs. 10 mins.

39.



O is the centre of the circle above. The area of the circle is 20 cm². The area of the minor sector AOB, in cm², is

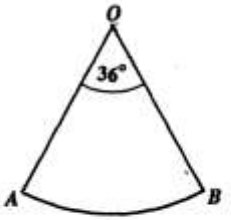
(A) $\frac{1}{60} \times 20$

(B) $\frac{60}{360} \times 20$

(C) $\left(\frac{360 - 60}{360}\right) \times 20$

(D) 60×20

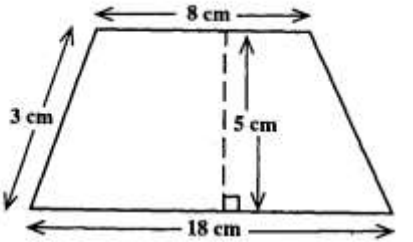
40.



In the figure above, O is the centre of a circle of radius 10 cm and angle AOB is 36°. What is the length, in cm, of the arc AB?

(A) 2π
(B) 4π
(C) 20π
(D) 24π

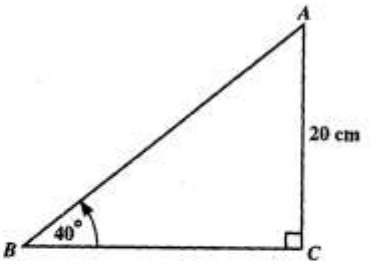
41.



The area of the trapezium above is

(A) 45 cm²
(B) 65 cm²
(C) 90 cm²
(D) 130 cm²

42.



The triangle ABC above is right-angled at C. $A\hat{B}C = 40°$ and $AC = 20$ cm. The length of BC, in cm, is

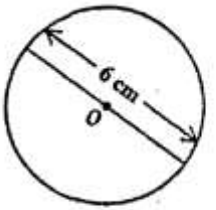
(A) $\frac{20}{\tan 40°}$

(B) $\frac{20}{\sin 40°}$

(C) $20 \sin 40°$

(D) $20 \tan 40°$

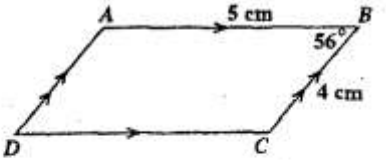
June 2002



43. The circle shown in the diagram, **not drawn to scale**, has centre at O. The area of the circle, in cm², is

(A) 6π
(B) 9π
(C) 12π
(D) 36π

44.



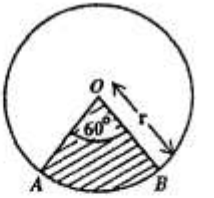
In the parallelogram $ABCD$ above, $AB = 5$ cm, $BC = 4$ cm and angle $ABC = 56°$. What is the area, in cm², of the parallelogram $ABCD$?

(A) 5 sin 56°
(B) 5 cos 56°
(C) 20 sin 56°
(D) 10 cos 56°

45. 4:00 p.m. may be represented as

(A) 04:00 hrs
(B) 14:00 hrs
(C) 16:00 hrs
(D) 20:00 hrs

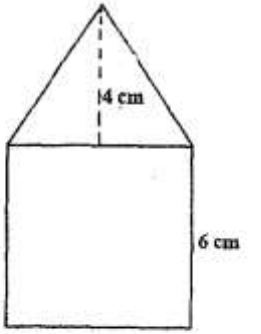
46.



In the diagram above, AOB is a sector of a circle with angle $AOB = 60°$ and $OB = r$ cm. What is the area, in cm², of the sector AOB?

(A) $\frac{1}{3}\pi r$
(B) $\frac{1}{6}\pi r$
(C) $\frac{1}{3}\pi r^2$
(D) $\frac{1}{6}\pi r^2$

47.



The figure above, **not drawn to scale**, consists of a triangle resting on a square of side 6 cm. The height of the triangle is 4 cm. What is the area, in cm², of the figure?

(A) 36
(B) 42
(C) 48
(D) 60

48. Jerry takes 16 minutes to drive to his workplace which is 24 km away from his home. His speed in km per hour is

(A) $\frac{16}{24 \times 60}$

(B) $\frac{24 \times 16}{60}$

(C) $\frac{16 \times 60}{24}$

(D) $\frac{24 \times 60}{16}$

49. A school day starts at 08:50 hrs. and ends at 15:00 hrs. There is a 20 minute morning break and a midday break for 1 hr. How much time is devoted to school activities?

(A) 2 hrs. 30 mins.
(B) 4 hrs. 50 mins.
(C) 5 hrs. 30 mins.
(D) 6 hrs. 10 mins.

50. The width of a rectangular block of wood is x centimetres. If its height is two-thirds its width and its length is 4 times its height, then its volume, in cm^3, is

(A) $\frac{17x}{3}$

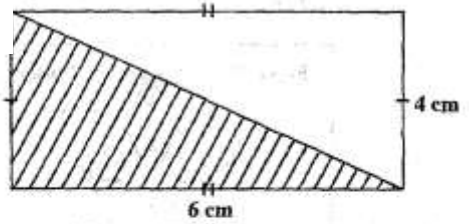
(B) $\frac{8x^3}{9}$

(C) $\frac{8x^3}{3}$

(D) $\frac{16x^3}{9}$

June 2001

51.



The diagram shows a rectangle with one diagonal drawn. The area of the shaded part of the rectangle is

(A) $(6 + 4)\ cm^2$

(B) $\frac{(6 \times 4)}{2} cm^2$

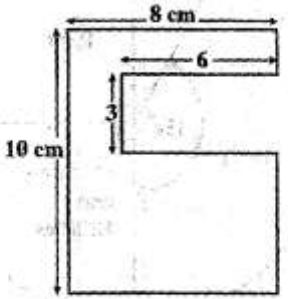
(C) $(4 + 6 + 4 + 6)\ cm^2$

(D) $(6 \times 4)\ cm^2$

52. If a circle has radius r, diameter d and area A, then A =

(A) πr^2
(B) πd^2
(C) πd
(D) $2\pi r$

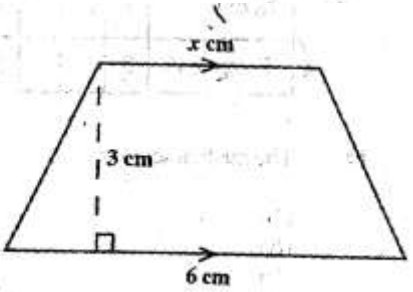
53. In the diagram of the room shown below all angles are 90°.



The perimeter of the room is:

(A) 36
(B) 41
(C) 48
(D) 62

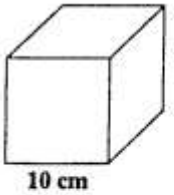
54.



If the area of the trapezium above is 15cm², what is the value of x in cm?

(A) $2\frac{1}{2}$
(B) $3\frac{1}{3}$
(C) 4
(D) 5

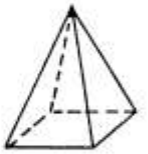
55.

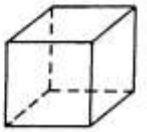


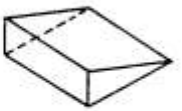
The volume of the cube above is

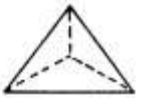
(A) 30 cm^3
(B) 100 cm^3
(C) 300 cm^3
(D) 1 000 cm^3

56. Which of these drawings represents a square pyramid?

(A)


(B)


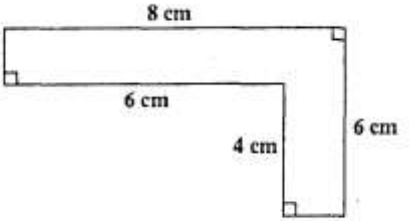
(C)


(D)


57. A square has the same area as a rectangle with sides of length 9 centimetres and 16 centimetres. What is the length of the side of the square?

(A) 9 cm
(B) 12 cm
(C) 12.5 cm
(D) 72 cm

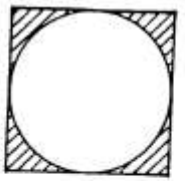
58.



What is the perimeter of the shape above?

(A) 24 cm
(B) 26 cm
(C) 28 cm
(D) 48 cm

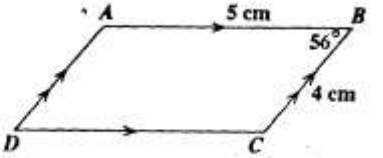
59.



The figure above represents a circle placed inside a square with side 14 cm. Find the area of the shaded region. Use $\pi = \frac{22}{7}$

(A) 112 cm^2
(B) 42 cm^2
(C) 12 cm^2
(D) 34 cm^2

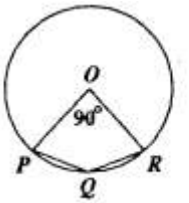
60.



In the parallelogram $ABCD$ above, $AB = 5$ cm, $BC = 4$ cm and angle $ABC = 56°$. What is the area of the parallelogram $ABCD$?

(A) $5 \sin 56° \text{ cm}^2$
(B) $5 \cos 56° \text{ cm}^2$
(C) $20 \sin 56° \text{ cm}^2$
(D) $10 \cos 56° \text{ cm}^2$

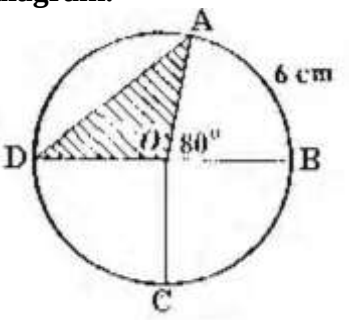
61.



In the figure above, O is the centre of the circle. What is the size of angle PQR?

(A) 11°
(B) 90°
(C) 135°
(D) 150°

Items 62-63 refers to the following diagram.



62. In the circle above not drawn to scale, DB is the diameter, $\angle AOB = 80°$ and the arc $AB = 6$ cm.

What is the circumference of the circle?

(A) $\frac{50\pi}{9}$ cm

(B) $\frac{20\pi}{9}$ cm

(C) 27 cm

(D) 480 cm

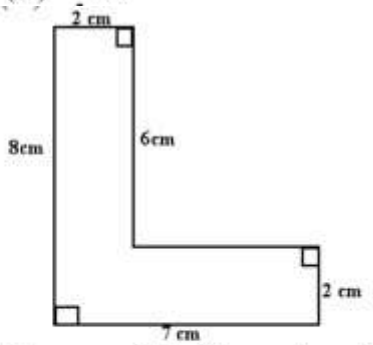
63. What is the size of angle $\angle ADO$?

(A) 20

(B) 40

(C) 50

(D) 80



64. The area of the figure above is

(A) 26 cm^2

(B) 42 cm^2

(C) 48 cm^2

(D) 56 cm^2

65. What is the perimeter of a square whose area is 625 cm^2?

(A) 25 cm

(B) 50 cm

(C) 100 cm

(D) 125 cm

66. A square has the same area as a rectangle, with sides of length 16 centimetres and 9 centimetres. What is the length, in cm, of a side of the square?

(A) 9

(B) 12

(C) 12.5

(D) 72

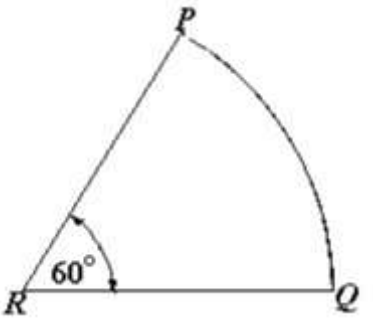
67. The length of a lake is 8 km. The lake is represented on a map by a length of 2 cm. The scale is

(A) 1 : 4

(B) 1 : 2 000

(C) 1 : 200 000

(D) 1 : 400 000



68. The figure above, **not drawn to scale**, shows the sector of a circle ***POQ***, whose centre is ***O***. The circumference of the entire circle is 44 cm. The area of the minor sector ***POQ*** is

(Use $\pi = \frac{22}{7}$)

(A) $\frac{44}{3}\text{cm}^2$

(B) $\frac{77}{3}\text{cm}^2$

(C) $\frac{154}{3}\text{cm}^2$

(D) $\frac{304}{3}\text{cm}^2$

69. The sum of interior angles of a regular polygon is 720°. If one side of the polygon is 10 cm, then the perimeter of the polygon, in cm, is

(A) 50
(B) 60
(C) 80
(D) 100