

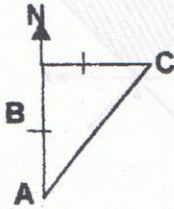
MULTIPLE CHOICE QUESTIONS

GEOMETRY

1. PQRS is a square and M is a point on PS such that an angle  $PMQ = 70^\circ$ .  $MQS =$

- a)  $110^\circ$       b)  $22^\circ$   
c)  $25^\circ$       d)  $80^\circ$

2. In the figure B is due north of A, and C is due east of B and  $AB = BC$ . The bearing of A from C is



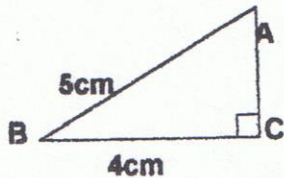
- a)  $045^\circ$       b)  $090^\circ$   
c)  $180^\circ$       d)  $225^\circ$

3. The number of squares shown in the diagram is



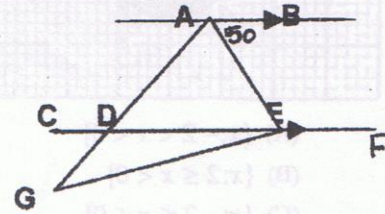
- a) 9      b) 10      c) 14      d) 15

4. The diagram shows a triangle in which angle  $ACB = 90^\circ$ ,  $AB = 5\text{cm}$ ,  $BC = 4\text{cm}$ ,  $\sin ABC =$



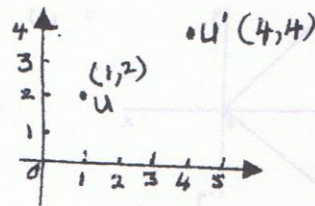
- a)  $\frac{4}{5}$       b)  $\frac{3}{4}$   
c)  $\frac{3}{5}$       d)  $\frac{2}{5}$

5. In the diagram  $AB \parallel CF$ , angle  $BAE = 50^\circ$ , angle  $AEG = 70^\circ$  and angle  $ADC = 110^\circ$ . Find angle AGE



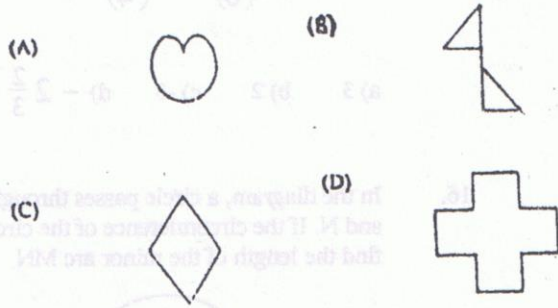
- a)  $55^\circ$       b)  $50^\circ$   
c)  $40^\circ$       d)  $60^\circ$

6. The point  $U'$  is the image of the point U under a translation. Vector  $UU' =$

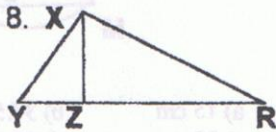


- a)  $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$       b)  $\begin{pmatrix} 4 \\ 4 \end{pmatrix}$   
c)  $\begin{pmatrix} -3 \\ -2 \end{pmatrix}$       d)  $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$

7. Which of these figures has NO lines of symmetry

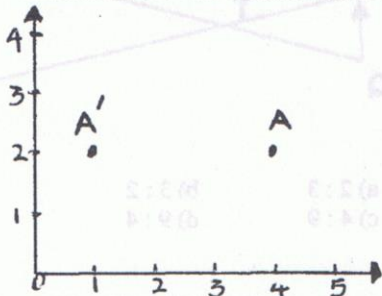


8. In the diagram, XZ is perpendicular to YR, XY = 10cm, XZ = ZR = 8 cm. The area of the triangle XYR =



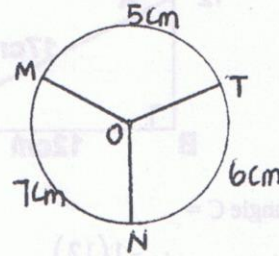
- a)  $40 \text{ cm}^2$     b)  $72 \text{ cm}^2$   
 c)  $32 \text{ cm}^2$     d)  $56 \text{ cm}^2$

9. In the diagram,  $A'$  is the image of A under a transformation. The transformation is



- a) an anti-clockwise rotation of  $180^\circ$  about centre (3, 0)  
 b) a translation with vector  $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$   
 c) a reflection in  $x = 2 \frac{1}{2}$   
 d) a stretch with invariant line  $y = 3$  and scale factor 2

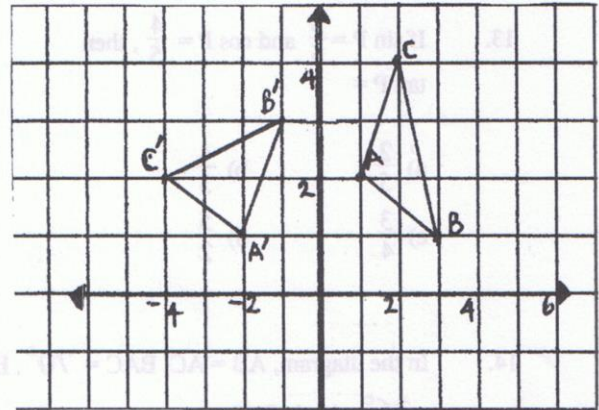
10. In the diagram, O is the centre of the circle



$\hat{MOT} =$

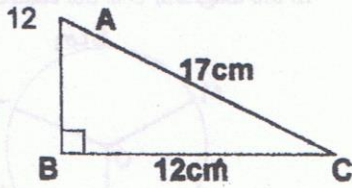
- a)  $72^\circ$     b)  $100^\circ$   
 c)  $60^\circ$     d)  $120^\circ$

11. In the diagram, the image of the triangle ABC, under a transformation is triangle  $A'B'C'$ , the transformation is



- a) a stretch parallel to the y axis with scale factor -2  
 b) an anti-clockwise rotation of  $90^\circ$  about O  
 c) a reflection in the line parallel to  $x = 0$   
 d) a translation  $\begin{pmatrix} -2 \\ 1 \end{pmatrix}$

12. Which of the following is true?



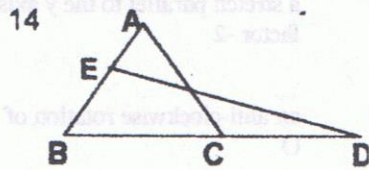
angle C =

- $\sin^{-1}\left(\frac{12}{17}\right)$
- $\cos^{-1}\left(\frac{12}{17}\right)$
- $\tan^{-1}\left(\frac{12}{17}\right)$
- $\tan^{-1}\left(\frac{2}{17}\right)$

13. If  $\sin P = \frac{3}{5}$  and  $\cos P = \frac{4}{5}$ , then  $\tan P =$

- $\frac{2}{5}$
- $\frac{4}{3}$
- $\frac{3}{4}$
- $\frac{5}{2}$

14. In the diagram,  $AB = AC$ ,  $\angle BAC = 70^\circ$ .  $\angle EDB = 36^\circ$ . Angle  $\angle BED =$

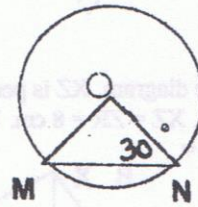


- $74^\circ$
- $34^\circ$
- $91^\circ$
- $89^\circ$

15. The vectors  $\begin{pmatrix} 6 \\ 8 \end{pmatrix}$  and  $\begin{pmatrix} x \\ 4 \end{pmatrix}$  are parallel. Find x

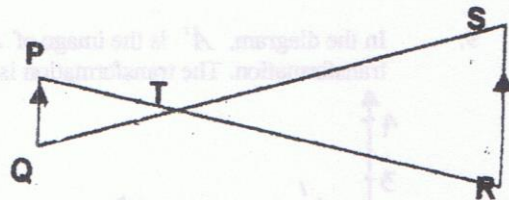
- 3
- 2
- 3
- $-2\frac{2}{3}$

16. In the diagram, a circle passes through the point M and N. If the circumference of the circle is 90 cm, find the length of the minor arc MN



- 15 cm
- 37.5 cm
- 30 cm
- 22.5 cm

17. In the diagram  $PQ \parallel RS$ , and PR and QS intersect at T. If  $PT = 6$  cm,  $RT = 9$  cm, then  $PQ : SR =$

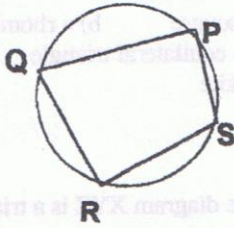


- 2 : 3
- 3 : 2
- 4 : 9
- 9 : 4

18. In triangle XYZ,  $XY = XZ = 10$  cm,  $YZ = 12$  cm, the area of triangle XYZ =

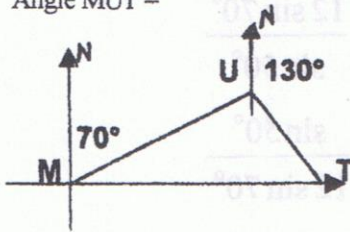
- $48 \text{ cm}^2$
- $760 \text{ cm}^2$
- $80 \text{ cm}^2$
- $50 \text{ cm}^2$

19. The diagram shows a circle PQRS. Which of the following is true?



- a)  $\hat{PQR} = 90^\circ$   
 b)  $\hat{PQR} = \hat{PSR}$   
 c)  $\hat{QRS} + \hat{QPS} = 180^\circ$   
 d)  $\hat{PQR} + \hat{QRS} = 180^\circ$

20. In the diagram, the bearing of U from M is  $070^\circ$  and the bearing of T from U is  $130^\circ$ . Angle MUT =



- a)  $090^\circ$       b)  $130^\circ$   
 c)  $120^\circ$       d)  $100^\circ$

21. Find the co-ordinate of the mapping of the point (2,3) under an enlargement with scale factor 3 and centre (0, 0)

- a) (6, 9)      b) (8, 27)  
 c) (9, 27)      d) (8, 9)

22. Find the image of the point (2, 5) under an enlargement [(1, 2), 2]

- a) (3, 8)      b) (2, 10)  
 c) (4, 10)      d) (5, 12)

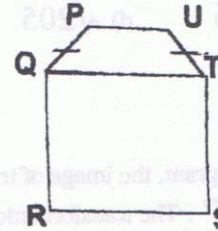
23. The transformation  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  represents

- a) a shear parallel to  $x = 0$ , S.F = 3  
 b) a shear parallel to  $y = 0$ , S.F = 3  
 c) a reflection in  $y = x$   
 d) identity matrix

24. The transformation matrix  $\begin{bmatrix} 4 & 0 \\ 0 & 4 \end{bmatrix}$  represents

- a) Identity matrix  
 b) enlargement with scale factor 4, centre the origin  
 c) reflection in  $x = 4$   
 d) reflection in  $y = 4x$

25. In the diagram QRST is a square and PUTQ is a trapezium. If  $PQ = UT = 5\text{cm}$ ,  $PU = 3\text{cm}$  and  $RS = 9\text{cm}$ , find the area of PQRSTU



- a)  $111\text{cm}^2$       b)  $126\text{cm}^2$   
 c)  $105\text{cm}^2$       d)  $96\text{cm}^2$

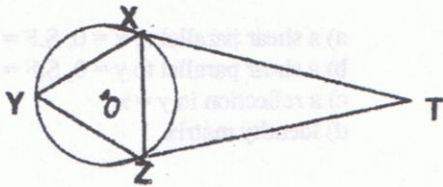
26. The points  $M(0, 4)$ ,  $N(7, 3)$ ,  $U(3, 0)$  and  $V(x, y)$  find the coordinates of the point V

- a) (3, 7)      b) (7, 4)  
 c) (4, 7)      d) (3, 8)

27. Which of the following has at least 3 lines of symmetry?

- a) a square      b) a rhombus  
 c) an equilateral triangle  
 d) a rectangle

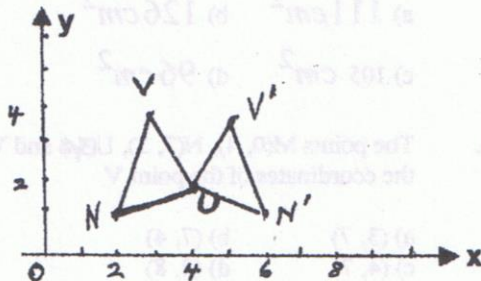
28. The diagram shows a circle XYZ with XT and ZT tangents. If angle XYZ = 70°. Find angle XTZ



- a) 140°      b) 110°  
c) 40°        d) 70°
29. that  $OM = \begin{bmatrix} 4 \\ 5 \end{bmatrix}$ ,  $ON = \begin{bmatrix} -1 \\ 2 \end{bmatrix}$

Find  $|MN|$

- a)  $\sqrt{58}$       b)  $\sqrt{34}$   
c)  $\sqrt{116}$      d)  $\sqrt{205}$
30. In the diagram, the image of triangle NUM is  $N'U'V'$ . The transformation is

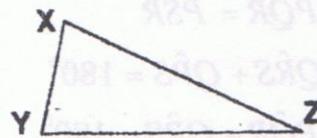


- a) a reflection in line  $x = 4$   
b) a reflection in line  $y = 2$   
c) a rotation of 180° about (4, 2)  
d) an enlargement, centre (4, 2)

31. Which of the following has rotational symmetry of order 3?

- a) a square      b) a rhombus  
c) an equilateral triangle  
d) a kite

32. In the diagram XYZ is a triangle in which  $YZ = 12$  cm,  $\hat{YXZ} = 50^\circ$  and  $\hat{XZY} = 70^\circ$ . Find XY



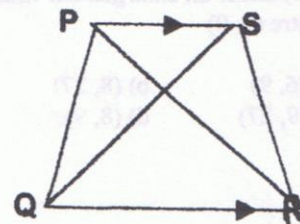
a)  $\frac{12 \sin 50^\circ}{\sin 70^\circ}$

b)  $\frac{12 \sin 70^\circ}{\sin 50^\circ}$

c)  $\frac{\sin 50^\circ}{12 \sin 70^\circ}$

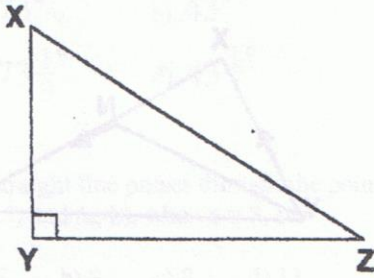
d)  $\frac{\sin 70^\circ}{12 \sin 50^\circ}$

33. In the diagram,  $PS = 10$ cm,  $QR = 14$ cm, and  $PS \parallel QR$ . What is  $PT : RT$



- a) 25 : 49      (b) 49 : 25  
3. 7 : 5        (d) 5 : 7

34. The diagram shows a triangle XYZ in which XZ = 14cm,  $\hat{XZY} = 58^\circ$  and  $\hat{XYZ} = 90^\circ$ . Find the length of the perpendicular from Y to XZ

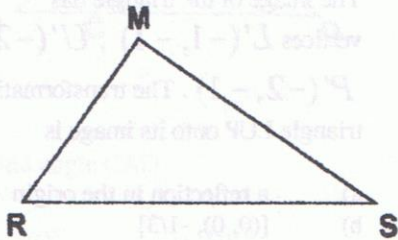


- a)  $14 \sin 58^\circ \tan 32^\circ$   
 b)  $14 \sin 58^\circ \cos 32^\circ$   
 c)  $14 \sin 32^\circ \cos 58^\circ$   
 d)  $14 \sin 32^\circ \sin 58^\circ$

35. The vectors  $\begin{pmatrix} n \\ 6 \end{pmatrix}$  and  $\begin{pmatrix} 9 \\ 4 \end{pmatrix}$  are perpendicular, find the value of n

- a)  $-2\frac{2}{3}$       b)  $12\frac{1}{2}$   
 c)  $2\frac{2}{3}$       d)  $-13\frac{1}{2}$

36. In the diagram MRS, MR = 12cm, MS = 8cm, RS = 10 cm, find the area of the triangle MRS (answer to one sig. fig)



- a)  $40 \text{ cm}^2$       b)  $48 \text{ cm}^2$   
 c)  $60 \text{ cm}^2$       d)  $65 \text{ m}^2$

37. Find the length of the line joining the points (2,3) and (4, 10)

- a)  $\sqrt{193}$       b)  $\sqrt{65}$   
 c)  $\sqrt{182}$       d)  $\sqrt{53}$

38. Find the image of the point (3, 6), under the transformation  $\begin{bmatrix} 2 & 3 \\ -2 & -1 \end{bmatrix}$

- a) (6, 9)      b) (21, 6)  
 c) (3, 18)      d) (9, 6)

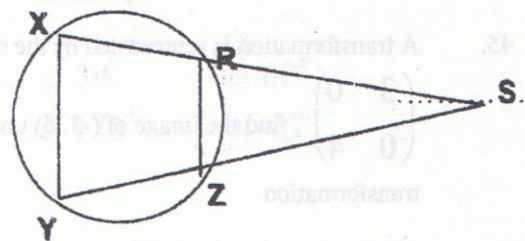
39. Given that  $p = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$  and  $q = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$   $2p - 3q =$

- a)  $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$       b)  $\begin{pmatrix} 14 \\ 1 \end{pmatrix}$   
 c)  $\begin{pmatrix} -16 \\ -9 \end{pmatrix}$       d)  $\begin{pmatrix} -8 \\ -9 \end{pmatrix}$

40. What is the image of the point (5, 4) under a reflection in the line  $x = 1$

- a) (-3, 4)      b) (4, -3)  
 c) (3, -4)      d) (3, 4)

41. In the diagram, RS = ZS and angle RXY =  $70^\circ$ . Find RSZ



- a)  $30^\circ$       b)  $40^\circ$   
 c)  $140^\circ$       d)  $20^\circ$

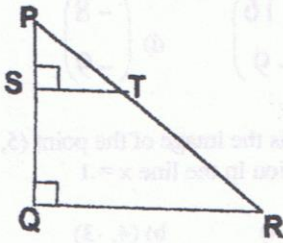
42. If  $x$  is an acute angle, then  $\sin(90 - x^\circ) =$

- a)  $\sin x$                       b)  $\tan x$   
 c)  $\cos x$                       d)  $-\sin x$

43. If  $\vec{OM} = 3i + 6j$  and  $\vec{ON} = 2i + 3j$ , then  $\vec{MN} =$

- a)  $-i - 9j$                       b)  $i + 9j$   
 c)  $i - 3j$                       d)  $i + 3j$

44. In the diagram,  $\hat{RST} = \hat{PQR} = 90^\circ$ ,  $PS = 4\text{cm}$  and  $SQ = 6\text{cm}$ . Find the area of the triangle PST : triangle PQR

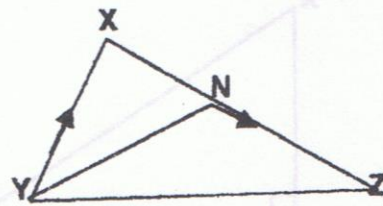


- a)  $\frac{4}{9}$                       b)  $\frac{2}{3}$   
 c)  $\frac{2}{5}$                       d)  $\frac{4}{25}$

45. A transformation is represented by the matrix  $\begin{pmatrix} 3 & 0 \\ 0 & 4 \end{pmatrix}$ , find the image of  $(-3, 6)$  under this transformation

- a)  $(24, -9)$                       b)  $(-9, 24)$   
 c)  $(-6, 10)$                       d)  $(-12, 18)$

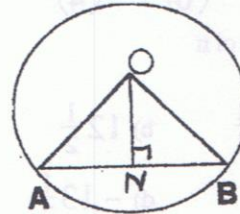
46. In the diagram  $\vec{YX} = 3m + n$ ,  $\vec{XZ} = 6n$  and  $XN : NZ = 1 : 2$ .



Find in terms of  $m$  and  $n$   $\vec{YN}$

- a)  $3m + n$                       b)  $3m - n$   
 c)  $3m + 2n$                       d)  $3m + 4n$

47. The diagram shows a circle with centre O, AB is a chord and ON is perpendicular to AB. If  $OA = 10\text{cm}$  and  $AB = 16\text{cm}$ , find ON



- a) 8 cm                      b) 6 cm  
 c) 5 cm                      d) 9 cm

48. A triangle has vertices  $L(3, 3)$ ,  $U(6, 6)$  and  $P(6, 3)$ . The image of the triangle has vertices  $L'(-1, -1)$ ,  $U'(-2, -2)$  and  $P'(-2, -1)$ . The transformation that maps triangle LUP onto its image is

- a) a reflection in the origin  
 b)  $[(0, 0), -1/3]$   
 c)  $[(0, 0), +3]$   
 d) reflection in  $y = -x$

49. The interior angles of a polygon are  $x^\circ$ ,  $2x^\circ$ ,  $60^\circ$ ,  $3x^\circ$  and  $40^\circ$ , find  $x$

- a)  $73^\circ$       b)  $43^\circ$   
 c)  $73\frac{1}{3}$       d)  $43\frac{1}{3}$

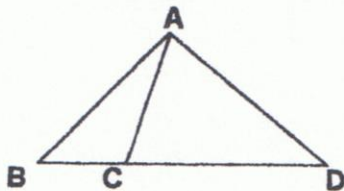
50. A straight line passes through the point (1, 3) and (2, 5) and (a, b), when  $a = 3$ ,  $b =$

- a) 7    b) 9    c) 8    d) 13

51. The transformation matrix  $\begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$  represents

- a) Identity matrix  
 b) rotation through  $180^\circ$ , centre (0, 0)  
 c) reflection in  $y = 0$   
 d) reflection in  $y = -x$

52. In the diagram, angle  $ABC = 44^\circ$ , angle  $BAC = 38^\circ$ , angle  $ADC = 56^\circ$ , and the points B, C and D are on a straight line



Find angle CAD

- a)  $80^\circ$       b)  $98^\circ$   
 c)  $42^\circ$       d)  $82^\circ$

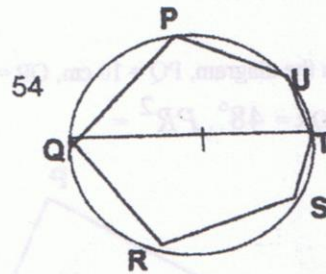
53. Given that  $QP = \begin{pmatrix} 3 \\ 6 \end{pmatrix}$ ,  $PR = \begin{pmatrix} 3 \\ -3 \end{pmatrix}$ ,  $MP =$

$\begin{pmatrix} 1 \\ 2 \end{pmatrix}$ ,  $MN \parallel QR$  and M and N are points on PQ and PR respectively, then MN in column form is

- a)  $\begin{pmatrix} 2 \\ -1 \end{pmatrix}$       b)  $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$   
 c)  $\begin{pmatrix} -2 \\ 1 \end{pmatrix}$       d)  $\begin{pmatrix} 1 \\ 2 \end{pmatrix}$

54. The diagram shows a circle PQRSTU with centre O. If  $PU = UT$  and

$\angle PUT = 140^\circ$ , find  $\angle QRU =$



- a)  $70^\circ$       b)  $90^\circ$   
 c)  $50^\circ$       d)  $40^\circ$

55. Given that XYZRST is a regular polygon, then angle  $YZT =$

- a)  $30^\circ$       b)  $60^\circ$   
 c)  $120^\circ$       d)  $45^\circ$



56. The single transformation for a reflection in the x-axis followed by  $[(0, 0), 2]$

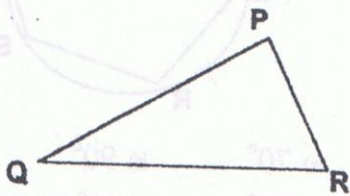
- a)  $2 \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$   
 b)  $2 \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$   
 c)  $2 \begin{pmatrix} -1 & 0 \\ 0 & -1 \end{pmatrix}$   
 d)  $2 \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$

57. A straight line passes through the points (2, 5), (4, 13) and (x, y). If  $y = 9$ , then  $x =$

- a) 6    b) 3    c) 12    d) 5

58. In the diagram,  $PQ = 10$  cm,  $QR = 9$  cm and angle  $PQR = 48^\circ$ .  $PR^2 =$

- a)  $10^2 + 9^2 - 2(10)(9) \cos 48^\circ$   
 b)  $10^2 + 9^2 + 2(10)(9) \cos 48^\circ$   
 c)  $10^2 - 9^2 - 2(10)(9) \cos 48^\circ$   
 d)  $10^2 - 9^2 + 2(10)(9) \cos 48^\circ$

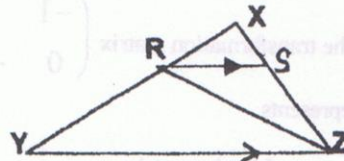


59. Given that  $\vec{OU} = 4i + 5j$  and

$$\vec{OV} = 5i - 6j, \text{ then } |\vec{UV}| =$$

- a)  $\sqrt{120}$     b)  $\sqrt{122}$   
 c)  $\sqrt{202}$     d)  $\sqrt{82}$

60. In the diagram  $RX = 6$  cm,  $RY = 2$  cm,  $XS = 4$  cm and angle  $XRS = XZY$ . Find  $XZ$



- a) 14 cm    b) 8 cm  
 c) 15 cm    d) 12 cm

