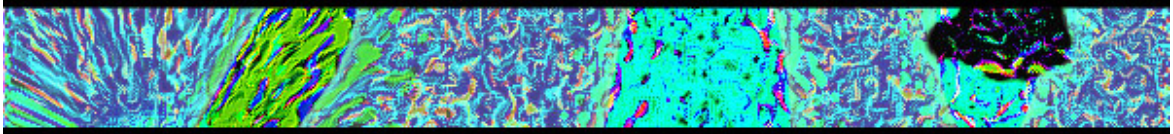
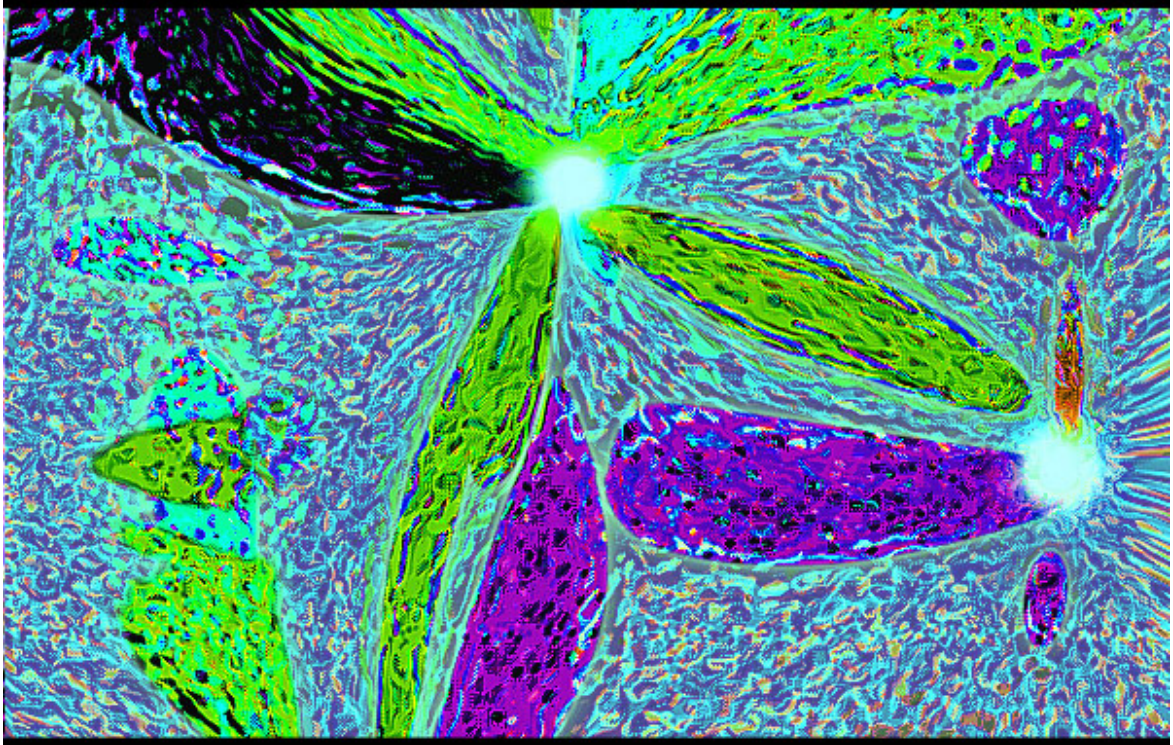
GCSE MATHS TUTOR



Worksheets



volume I

SHAPE & SPACE

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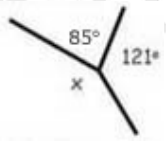
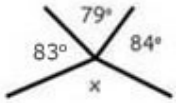
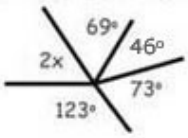
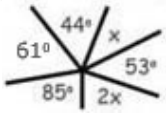
Contents

1. Find the value of ***x***.

(a) 

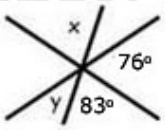
(b) 

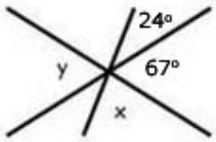
(c) 

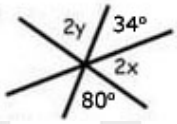
(d) 

2. Find the values of ***x*** and ***y***.

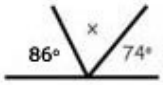
(a) 

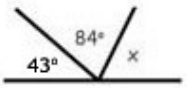
(b) 

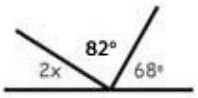
(c) 

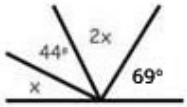
(d) 

3. Find the value of ***x*** .

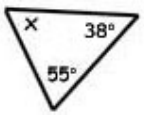
(a) 

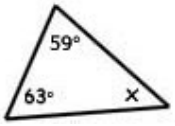
(b) 

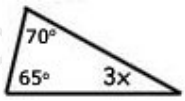
(c) 

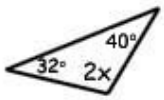
(d) 

4. Find the values of ***x*** .

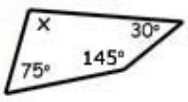
(a) 

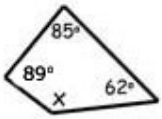
(b) 

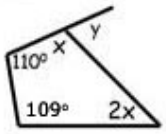
(c) 

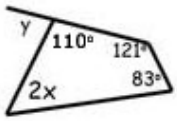
(d) 

5. Find the values of ***x*** and ***y***.

(a) 

(b) 

(c) 

(d) 

1.

(a) 154^o (b) 114^o (c) 24.5^o (d) 39^o

2.

(a) 55^o , 55^o (b) 83^o , 21^o (c) 89^o , 67^o (d) 33^o , 40^o

3.

(a) 20^o (b) 53^o (c) 15^o (d) 22.3^o

4.

(a) 87^o (b) 58^o (c) 15 (d) 54^o

5.

(a) 110^o (b) 124^o (c) 47^o , 133^o (d) 23^o , 70^o

1. ABC is an equilateral triangle, with BC horizontal and C to the right of B.
What is the bearing of:

(a) A from B (b) B from C (c) C from A

(d) B from A (e) A from C (f) C from B

2. ABCD is a rectangle, with AB horizontal and B to the right of A.
If BC is twice the length of AB, what is the bearing of:
(answers to 1 d.p.)

(a) A from C (b) B from D (c) C from A

(d) D from A (e) B from C (f) D from C

3. ABCD is a square, with AB horizontal and B to the right of A.
If the centre of the square, where the diagonals meet is point E, what is the bearing of:

(a) E from C (b) D from E (c) E from A

(d) B from A (e) A from C (f) D from A

4. A circle has points on its circumference A, B, C, D, E, F at intervals of 60^o drawn from the centre O.
If A is at the top of the circle and the other points are arranged in order clockwise, what is the bearing of:

(a) B from A (b) F from C (c) D from E

(d) O from B (e) A from F (f) C from O

1.

(a) 30^o (b) 270^o (c) 150^o

(d) 210^o (e) 330^o (f) 090^o

2.

(a) 333.4^o (b) 26.6^o (c) 153.4^o

(d) 180^o (e) 0000 (f) 270^o

3.

(a) 315^o (b) 225^o (c) 135^o

(d) 090^o (e) 315^o (f) 180^o

4.

(a) 120^o (b) 300^o (c) 120^o

(d) 240^o (e) 60^o (f) 120^o

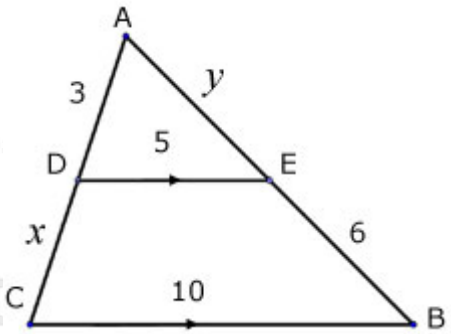
1. A right-angled triangle has sides of length 3 cm, 4 cm and 5 cm.
   In ascending order, what are the lengths of the sides of similar triangles with the following areas: (answers to 2 d.p.)

   (a) 24 cm^2 (b) 65 cm^2 (c) 112cm^2 (d) 18cm^2 (e) 39cm^2

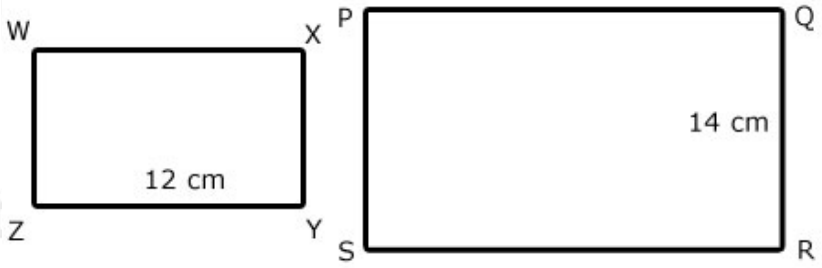
2. A regular cylinder of height 25 cm has a volume of 450 cm^3 .

   (a) what is the volume of a similar cylinder of twice the height ?
   (b) what is the height of another similar cylinder with twice the original volume ?
   (answers to 2 d.p.)

3. Find the lengths *x* and *y* in triangle ABC. (answers to 2 d.p.)



4. The two rectangles WXYX and PQRS are similar.
   Find the lengths XY and SR if the ratio of the area of the smaller rectangle to the larger is 1: 4



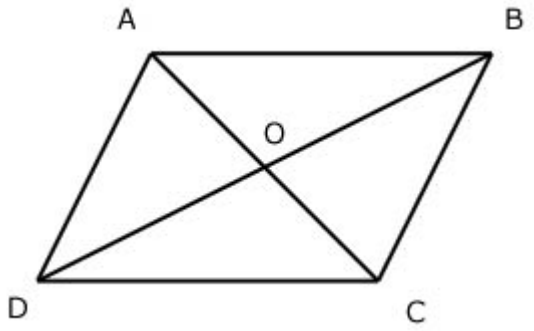
1. (a) 6, 8, 10
   (b) 9.87, 13.17, 16.46
   (c) 12.96, 17.28, 21.60
   (d) 5.20, 6.93, 8.66
   (e) 7.65, 10.20, 12.75+

2. (a) 3,600 cm^3
   (b) 31.50 cm^3

3. $x = 3$, $y = 6$

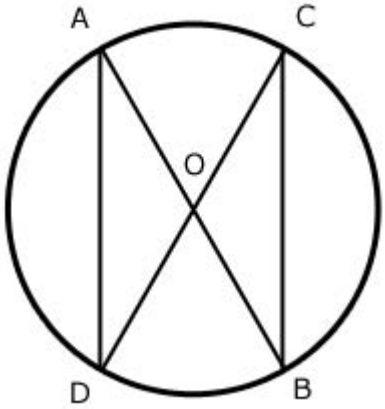
4. XY = 7 cm, SR = 24 cm

1. ABCD is a parallelogram, with O the point of intersection of the diagonals.

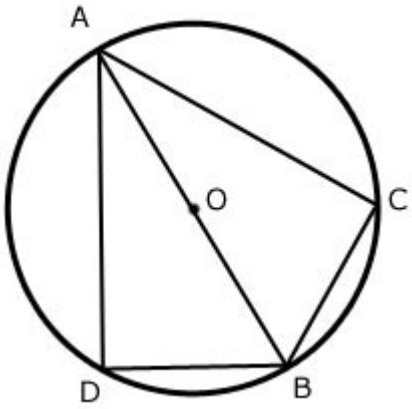


Prove that:
(a) triangle ABD is congruent to triangle BCD
(b) triangle ABC is congruent to triangle ACD
(c) triangle AOB is congruent to triangle COD
(c) triangle BOC is congruent to triangle AOD

2. AB and CD are diameters of the circle, passing through the centre O.
Prove that triangle AOD is congruent to triangle COB.



3. AB is a diameter of a circle.
If BC = BD, prove that triangle ABC is congruent to triangle ABD.



1.

(a) BD common side,
AB = DC opps. sides of paralleleogram equal
AD = BC opps. sides of paralleleogram equal

(SSS)

(b) AC common side,
AB = DC opps. sides of paralleleogram equal
AD = BC opps. sides of paralleleogram equal

(SSS)

(c) AO = CO bissected diagonals of a parallelogram are equal
BO = DO bissected diagonals of a parallelogram are equal
angle AOB = angle COD vertically opposite angles

(SAS)

(d) AO = CO bissected diagonals of a parallelogram are equal
BO = DO bissected diagonals of a parallelogram are equal
angle AOD = angle BOC vertically opposite angles

(SAS)

2. OA = OB = OC = OD radii of a circle
angle AOD = angle BOC vertically opposite angles

(SAS)

3. side BC = BD (given)
side AB is common, the hypotenuse
angle ADB = angle ACB = 90^o diameter subtends a right angle on the circumference

(side hypotenuse right angle)

.

1. What is the length of the hypotenuse of a right-angled triangle if the other two sides are: (lengths in cm, answer to 2 decimal places)

(a) 12, 5 (b) 13, 7 (c) 11, 9

(d) 7, 15 (e) 23, 14 (f) 17,12

(g) 34, 19 (h) 22, 31 (i) 43, 29

2. Given the length of the hypotenuse and one side respectively, find the missing side. (lengths in cm, answer to 2 decimal places)

(a) 12, 7 (b) 19, 5 (c) 61, 17

(d) 22, 13 (e) 34, 27 (f) 9, 4

(g) 12.1, 8.9 (h) 10.2, 7.1 (i) 29.9, 16.2

3. A ship travels a certain distance north or south before changing course travelling a further distance east or west.
For each pair of distances, what is the distance between the ship's starting position and where it ends up? (lengths in km, answer to 2 decimal places)

(a) N 32, W 18 (b) S 27, E21 (c) S 19, E 25

(d) N 21, E 29 (e) S 38, W31 (f) N 18, W24

(g) S 41, E 23 (h) N 32, W27 (i) S 48, E 59

4. For an isosceles right angled triangle, given the hypotenuse, what is the sum of the other two sides? (lengths in cm, answer to 2 decimal places)

(a) 20 (b) 36 (c) 48

(d) 31 (e) 17 (f) 10

(g) 11.2 (h) 9.8 (i) 20.1

1.

(a) 13 (b) 14.76 (c) 14.21

(d) 16.55 (e) 26.93 (f) 20.81

(g) 38.95 (h) 38.01 (i) 51.87

2.

(a) 9.75 (b) 18.33 (c) 58.58

(d) 17.75 (e) 20.66 (f) 8.06

(g) 8.20 (h) 7.32 (i) 25.13

3.

(a) 36.72 (b) 34.21 (c) 31.40

(d) 35.81 (e) 49.04 (f) 30.00

(g) 47.01 (h) 41.87 (i) 76.06

4.

(a) 28.28 (b) 50.91 (c) 67.88

(d) 43.84 (e) 24.04 (f) 14.14

(g) 15.84 (h) 13.86 (i) 28.43

The following questions are to be solved using the sine ratio only.

1. ABC is a right-angled triangle with the angle at A = 90^o .
What is the length of the side AB, with the following values for the hypotenuse BC and the angle at C ?(all distances in cm, answers to 2 d.p.)

(a) 5, 30^o (b) 12, 45^o (c) 18, 60^o

(d) 21, 50^o (e) 19, 28^o (f) 13, 75^o

(g) 9, 15^o (h) 37, 65^o (i) 41, 42^o

2. ABC is a right-angled triangle with the angle at B = 90^o .
What is the length of the side AC, with the following values for the side BC and the angle at A ?(all distances in cm, answers to 2 d.p.)

(a) 7, 35^o (b) 12, 48^o (c) 22, 52^o

(d) 31, 71^o (e) 28, 63^o (f) 13, 44^o

(g) 25, 42^o (h) 14, 19^o (i) 39, 81^o

3. Using the values for the hypotenuse and one side of a right angled triangle, calculate the unknown interior angles. (all distances in cm, answers to 1 d.p.)

(a) 9, 5 (b) 13, 8 (c) 19, 17

(d) 21, 13 (e) 42, 25 (f) 32, 19

(g) 17, 11 (h) 36, 21 (i) 49, 41

1.

(a) 2.50 (b) 8.49 (c) 15.59

(d) 16.09 (e) 8.92 (f) 12.56

(g) 2.33 (h) 33.53 (i) 27.43

2.

(a) 12.20 (b) 16.15 (c) 27.92

(d) 32.79 (e) 31.43 (f) 18.71

(g) 37.36 (h) 43.00 (i) 39.49

3.

(a) 33.7^o 56.3^o (b) 38.0^o, 52.0^o (c) 63.5^o, 26.5^o

(d) 38.2^o, 51.8^o (e) 36.5^o, 53.5^o (f) 36.4^o, 53.6^o

(g) 40.3^o, 49.7^o (h) 35.7^o, 54.3^o (i) 56.8^o, 33.2^o

The following questions are to be solved using the cosine ratio only.

1. ABC is a right-angled triangle with the angle at A = 90^o .
What is the length of the side AC, with the following values for the hypotenuse BC and the angle at C ?(all distances in cm, answers to 2 d.p.)

(a) 7, 30^o (b) 19, 45^o (c) 21, 60^o

(d) 11, 52^o (e) 14, 38^o (f) 27, 65^o

(g) 19, 25^o (h) 26, 75^o (i) 31, 52^o

2. ABC is a right-angled triangle with the angle at B = 90^o .
What is the length of the hypotenuse AC, with the following values for the side BC and the angle at C ?(all distances in cm, answers to 2 d.p.)

(a) 9, 55^o (b) 22, 28^o (c) 36, 22^o

(d) 42, 33^o (e) 17, 49^o (f) 26, 31^o

(g) 17, 68^o (h) 25, 70^o (i) 19, 24^o

3. Using the values for the hypotenuse and one side of a right angled triangle, calculate the unknown interior angles. (all distances in cm, answers to 1 d.p.)

(a) 8, 7 (b) 11, 7 (c) 29, 19

(d) 24, 15 (e) 45, 29 (f) 36, 29

(g) 19, 12 (h) 31, 28 (i) 47, 30

1.

(a) 6.06 (b) 13.44 (c) 10.50

(d) 6.77 (e) 11.03 (f) 11.41

(g) 17.22 (h) 6.73 (i) 19.09

2.

(a) 15.69 (b) 24.92 (c) 38.83

(d) 50.08 (e) 25.91 (f) 30.33

(g) 45.38 (h) 73.10 (i) 20.80

3.

(a) 29.0^o, 61.0^o (b) 50.5^o, 39.5^o (c) 49.1^o, 40.9^o

(d) 51.3^o, 38.7^o (e) 49.9^o, 40.1^o (f) 36.3^o, 53.7^o

(g) 50.8^o, 39.2^o (h) 25.4^o, 64.6^o (i) 50.3^o, 39.7^o

The following questions are to be solved using the tangent ratio only.

1. ABC is a right-angled triangle with the angle at A = 90^o .
What is the length of the side AB, with the following values for the side AC and the angle at C ?(all distances in cm, answers to 2 d.p.)

(a) 8, 30^o (b) 14, 45^o (c) 28, 60^o

(d) 15, 51^o (e) 17, 39^o (f) 21, 66^o

(g) 10, 27^o (h) 28, 71^o (i) 39, 59^o

2. ABC is a right-angled triangle with the angle at B = 90^o .
What is the length of the side BC, with the following values for the side AB and the angle at C ?(all distances in cm, answers to 2 d.p.)

(a) 6, 59^o (b) 27, 21^o (c) 37, 27^o

(d) 48, 34^o (e) 11, 46^o (f) 22, 32^o

(g) 19, 66^o (h) 23, 71^o (i) 14, 27^o

3. Using the values for the two sides at right angles to each other in a right angled triangle, calculate the unknown interior angles.
(all distances in cm, answers to 1 d.p.)

(a) 9, 5 (b) 12, 8 (c) 23, 16

(d) 26, 19 (e) 42, 19 (f) 37, 20

(g) 29, 10 (h) 32, 21 (i) 49, 9

1.

(a) 4.62 (b) 14.00 (c) 48.50

(d) 18.52 (e) 13.77 (f) 47.17

(g) 5.10 (h) 81.32 (i) 64.91

2.

(a) 3.61 (b) 70.34 (c) 72.62

(d) 71.16 (e) 10.62 (f) 35.21

(g) 8.46 (h) 7.92 (i) 27.48

3.

(a) 60.9^o, 29.1^o (b) 56.3^o, 33.7^o (c) 55.2^o, 34.8^o

(d) 53.8^o, 36.2^o (e) 65.7^o, 24.3^o (f) 61.6^o, 28.4^o

(g) 71.0^o, 19.0^o (h) 56.7^o, 33.3^o (i) 79.6^o, 10.4^o

1. Re-write each expression in terms of the angle θ between the limits $0^o < \theta < 90^o$.
e.g $\sin 210^o = -\sin 30^o$

(a) $\sin 150^o$ (b) $\cos 210^o$ (c) $\tan 350^o$

(d) $\cos 310^o$ (e) $\sin 260^o$ (f) $\tan 143^o$

(g) $\tan 315^o$ (h) $\cos 144^o$ (i) $\sin 288^o$

2. For each sine value of the angle θ given, write down the possible values of θ^o where $0^o < \theta < 360^o$. (answers to 1 d.p.)

(a) 0.2453 (b) -0.3221 (c) 0.2893

(d) -0.5502 (e) 0.7229 (f) -0.1978

3. For each cosine value of the angle θ given, write down the possible values of θ^o where $0^o < \theta < 360^o$. (answers to 1 d.p.)

(a) -0.6687 (b) 0.9104 (c) -0.3977

(d) 0.4381 (e) -0.1137 (f) 0.7711

4. For each tangent value of the angle θ given, write down the possible values of θ^o where $0^o < \theta < 360^o$. (answers to 1 d.p.)

(a) 0.9133 (b) -1.6683 (c) 2.9005

(d) -3.8433 (e)1.7349 (f) -4.2155

1.

(a) $\sin 30^o$ (b) $-\cos 30^o$ (c) $-\tan 10^o$

(d) $\cos 50^o$ (e) $-\sin 80^o$ (f) $-\tan 37^o$

(g) $-\tan 45^o$ (h) $-\cos 36^o$ (i) $-\sin 72^o$

2.

(a) 14.2^o , 165.8^o (b) 198.8^o , 341.2^o (c) 16.8^o , 163.2^o

(d) 213.4^o , 326.6^o (e) 46.3^o , 133.7^o (f) 191.4^o , 348.6^o

3.

(a) 132.0^o , 228.0^o (b) 24.4^o , 335.6^o (c) 113.4^o , 246.6^o

(d) 64.0^o , 296.0^o (e) 96.5^o , 263.5^o (f) 39.5^o , 320.5^o

4.

(a) 42.4^o , 222.4^o (b) 120.9^o , 300.9^o (c) 71.0^o , 251.0^o

(d) 104.6^o , 284.6^o (e) 60.0^o , 240.0^o (f) 103.3^o , 283.3^o

1. ABC is a triangle. Given the angle at C, the opposite side AB and the adjacent side BC respectively, find the angle at A. (all distances in cm, answers to 2 d.p.)

(a) 45^o , 7, 9 (b) 60^o , 12, 8 (c) 75^o , 11, 7

(d) 65^o , 10, 6 (e) 42^o , 13, 5 (f) 39^o , 15, 5

(g) 68^o , 14, 6 (h) 25^o , 7, 5 (i) 55^o , 20, 16

2. ABC is a triangle. Given the angle at C, the opposite side AB and the angle at B respectively, find the length of the side AC. (all distances in cm, answers to 2 d.p.)

(a) 49^o , 8, 55^o (b) 55^o , 5, 75^o (c) 53^o , 12, 49^o

(d) 86^o , 14, 31^o (e) 76^o , 11, 19^o (f) 63^o , 12, 52^o

(g) 58^o , 9, 71^o (h) 41^o , 17, 48^o (i) 35^o , 24, 44^o

3. ABC is a triangle. Given the angles at B and C and the length of BC respectively, find the length of the sides AB and AC. (all distances in cm, answers to 2 d.p.)

(a) 36^o , 24, 51^o (b) 29^o , 19, 38^o (c) 27^o , 22, 35^o

(d) 34^o , 36, 43^o (e) 33^o , 19, 45^o (f) 35^o , 18, 67^o

(g) 31^o , 27, 45^o (h) 44^o , 64, 12^o (i) 35^o , 33, 80^o

1.

(a) 65.39^o (b) 35.26^o (c) 37.93^o

(d) 32.94^o (e) 14.91^o (f) 12.11^o

(g) 23.41^o (h) 17.57^o (i) 40.94^o

2.

(a) 8.68 (b) 5.90 (c) 11.34

(d) 7.23 (e) 3.69 (f) 10.61

(g) 10.03 (h) 19.26 (i) 29.07

3.

(a) 14.13, 18.68 (b) 10.01, 12.71 (c) 11.31, 14.29

(d) 20.66, 25.20 (e) 10.58, 13.74 (f) 10.56, 16.94

(g) 14.33, 19.68 (h) 53.63, 16.05 (i) 20.88, 35.86

1. ABC is a triangle. Given the included angle C, the adjacent sides AC and BC respectively, find the length of side AB. (all distances in cm, answers to 2 d.p.)

(a) 60^o, 7, 9 (b) 49^o, 10, 12 (c) 35^o, 16, 19

(d) 52^o, 20, 17 (e) 31^o, 9, 15 (f) 44^o, 8, 6

(g) 82^o, 14, 18 (h) 76^o, 21, 27 (i) 66^o, 11, 15

2. ABC is a triangle. Given the lengths of the sides, AB, BC and AC respectively, calculate the angle at C.

(a) 4, 5, 7 (b) 12, 9, 11 (c) 18, 23, 29

(d) 33, 17, 25 (e) 19, 10, 13 (f) 21, 22, 17

(g) 8, 7, 12 (h) 37, 29, 45 (i) 56, 34, 28

3. XYZ is a triangle. Given the lengths of the sides, XY, YZ and XZ respectively, calculate the angle at Y.

(a) 23, 45, 37 (b) 46, 55, 65 (c) 12, 19, 18

(d) 34, 25, 19 (e) 52, 48, 61 (f) 16, 18, 12

(g) 17, 28, 26 (h) 52, 19, 34 (i) 22, 47, 29

1.

(a) 8.19 (b) 9.30 (c) 10.91

(d) 16.44 (e) 8.64 (f) 5.56

(g) 21.21 (h) 29.93 (i) 14.55

2.

(a) 34.05^o (b) 72.97^o (c) 38.36^o

(d) 101.88^o (e) 110.72^o (f) 63.65^o

(g) 39.84^o (h) 55.00^o (i) 128.91^o

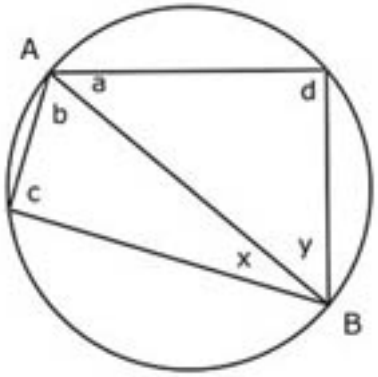
3.

(a) 55.08^o (b) 79.57^o (c) 66.61^o

(d) 33.35^o (e) 75.06^o (f) 40.80^o

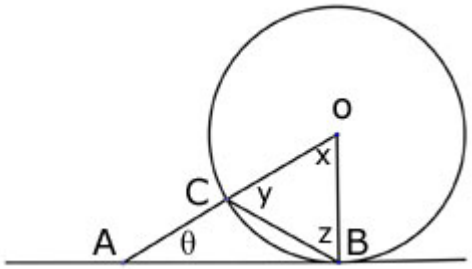
(g) 65.35^o (h) 14.96^o (i) 26.42^o

1. Given that AB is a diameter and the values for angles x and y respectively, find angles a, b, c and d.



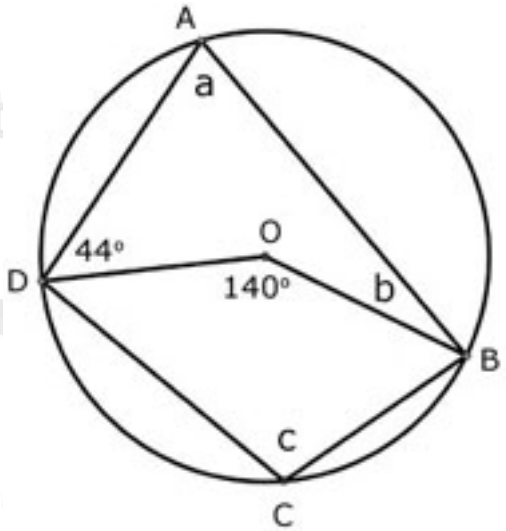
(a) 41^o , 69^o (b) 39^o , 65^o (c) 36^o , 72^o (d) 33^o , 75^o (e) 40^o , 74^o (f) 42^o , 68^o

2. O is the centre of the circle with AB a tangent.
Given the value of angle θ, find angles x, y and z.



(a) 42^o (b) 39^o (c) 36^o (d) 41^o (e) 31^o (f) 29^o

3. In the circle below with the given angles, find the unknown angles a, b and c.



1.

(a) a 21^o	b 49^o	c 90^o	d 90^o
(b) a 25^o	b 51^o	c 90^o	d 90^o
(c) a 18^o	b 54^o	c 90^o	d 90^o
(d) a 15^o	b 57^o	c 90^o	d 90^o
(e) a 16^o	b 50^o	c 90^o	d 90^o
(f) a 22^o	b 48^o	c 90^o	d 90^o

2.

(a) x 48^o	y 66^o	z 66^o	(b) x 51^o	y 64.5^o	z 64.5^o
(c) x 54^o	y 63^o	z 63^o	(d) x 49^o	y 65.5^o	z 65.5^o
(e) x 59^o	y 60.5^o	z 60.5^o	(f) x 61^o	y 59.5^o	z 59.5^o

3. a 70^o b 26^o c 110^o

1. If $x = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$ $y = \begin{pmatrix} 2 \\ -4 \end{pmatrix}$ $z = \begin{pmatrix} 3 \\ 0 \end{pmatrix}$

find:

(a) $x + y$ (b) $y + z$ (c) $x + z$

(d) $x - y$ (e) $y - z$ (f) $x - z$

2. If $p = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$ $q = \begin{pmatrix} 2 \\ -3 \end{pmatrix}$ $r = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$

solve each equation for the column vector $\boldsymbol{x}$

(a) $x = p - q$ (b) $x - q = p$ (c) $q = r - x$

(d) $r + p = 2x$ (e) $3r = 2q - x$ (f) $p = 3r - 2x$

3. Find the magnitude of each column vector. (answer to 2 d.p.)

(a) $\begin{pmatrix} 2 \\ 1 \end{pmatrix}$ (b) $\begin{pmatrix} -3 \\ 2 \end{pmatrix}$ (c) $\begin{pmatrix} 5 \\ -1 \end{pmatrix}$

4. If vectors are drawn from the origin O, what angle does each make with the positive x-axis in an anti-clockwise sense?

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

1.

(a) $\begin{pmatrix} 5 \\ 1 \end{pmatrix}$ (b) $\begin{pmatrix} 5 \\ -4 \end{pmatrix}$ (c) $\begin{pmatrix} 6 \\ 5 \end{pmatrix}$

(d) $\begin{pmatrix} 1 \\ 9 \end{pmatrix}$ (e) $\begin{pmatrix} -1 \\ -4 \end{pmatrix}$ (f) $\begin{pmatrix} 0 \\ 5 \end{pmatrix}$

2.

(a) $\begin{pmatrix} -1 \\ 6 \end{pmatrix}$ (b) $\begin{pmatrix} 3 \\ 0 \end{pmatrix}$ (c) $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

(d) $\begin{pmatrix} 2 \\ 0.5 \end{pmatrix}$ (e) $\begin{pmatrix} -5 \\ 0 \end{pmatrix}$ (f) $\begin{pmatrix} 4 \\ -4.5 \end{pmatrix}$

3.

(a) 2.24 (b) 3.61 (c) 5.10

4.

(a) 45^o (b) 135^o (c) 225^o

In your calculations use the value of pi to 6 places of decimals : $\pi = 3.141593$

1. Calculate the length of the arc subtended from the centre of each circle, given the angle of each arc and circle radius. (all measurements in cm, answers to 2 d.p.)

(a) 45^o , 3 (b) 64^o , 7 (c) 89^o , 15

(d) 25^o , 11 (e) 95^o , 19 (f) 127^o , 23

2. For each circle calculate the area of each sector, given the sector angle and circle radius. (all measurements in cm, answers to 2 d.p.)

(a) 36^o , 9 (b) 135^o , 12 (c) 241^o , 21

(d) 345^o , 14 (e) 141^o , 22 (f) 45^o , 37

3. Given sector angle and circle radius calculate the chord length for the each sector. (all measurements in cm, answers to 2 d.p.)

(a) 25^o , 11 (b) 148^o , 33 (c) 103^o , 46

(d) 174^o , 8 (e) 40^o , 28 (f) 74^o , 38

4. Given sector angle and circle radius calculate area of each minor segment. (all measurements in cm, answers to 2 d.p.)

(a) 57^o , 17 (b) 125^o , 55 (c) 142^o , 16

1.

(a) 2.36 (b) 7.82 (c) 23.3

(d) 4.80 (e) 31.50 (f) 50.98

2.

(a) 25.45 cm^2 (b) 169.65 cm^2 (c) 927.51 cm^2

(d) 590.12 cm^2 (e) 595.57 cm^2 (f) 537.63 cm^2

3.

(a) 4.76 (b) 63.44 (c) 72.00

(d) 15.98 (e) 19.15 (f) 45.74

4.

(a) 22.57 cm^2 (b) 2060.80 cm^2 (c) 238.43 cm^2

1. A prism has a cross section in the shape of an equilateral triangle.
Given the length of one side of the triangle and the length of the prism respectively, calculate its volume. (all measurements in cm, answer to 2 d.p.)

(a) 7, 19 (b) 12, 37 (c) 21, 45

2. Calculate the volumes of spheres with the following diameters.
(all measurements in cm, answer to 2 d.p.)

(a) 5 (b) 13 (c) 56

3. Calculate the volume of a tetrahedron with the length of one side of the base and vertical height given. (all measurements in cm, answer to 2 d.p.)

(a) 7, 9 (b) 16, 25 (c) 69, 88

4. Calculate the volume of a pyramid with the length on one side of the base and vertical height given. (all measurements in cm, answer to 2 d.p.)

(a) 8, 12 (b) 17, 22 (c) 26, 51

5. Calculate the volume of a cone with the diameter of the base and vertical height given.
(all measurements in cm, answer to 2 d.p.)

(a) 13, 23 (b) 28, 39 (c) 45, 66

1.

(a) 403.14 cm^3 (b) 2307.09 cm^3 (c) 8593.14 cm^3

2.

(a) 523.60 cm^3 (b) 9202.77 cm^3 (c) 735618.58 cm^3

3.

(a) 63.65 cm^3 (b) 923.76 cm^3 (c) 60473.00 cm^3

4.

(a) 256.00 cm^3 (b) 2119.33 cm^3 (c) 11492.00 cm^3

5.

(a) 1017.61 cm^3 (b) 8004.78 cm^3 (c) 34989.49 cm^3