Wisgrow Math A - Plus

Session 66 | Co ordinates 1 | Worksheet 66

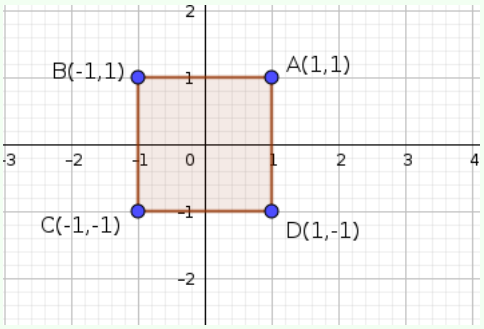
1) Draw coordinate axes

   a) Mark the points $A(1,1), B(-1,1), C(-1,-1), D(1,-1)$

   b) Complete the quadrilatearl $ABCD$ and suggest a suitable name to it

   c) Find the perimeter of $ABCD$

   d) Calculate the area of $ABCD$



   a) Figure is given above

   b) $ABCD$ is a square

   c) One side is 2 unit. Perimeter is $4 \times 2 = 8$

   d) Area $2 \times 2 = 4$ sq.unit

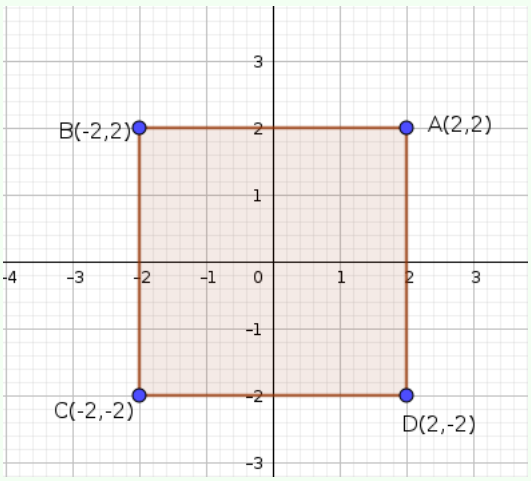
2) Draw coordinate axes

   a) Mark the points $A(2,2), B(-2,2), C(-2,-2)$ and $D(2,-2)$

   b) Suggest a suitable name to $ABCD$

   c) Find the perimeter of $ABCD$

   d) Calculate the area of $ABCD$



   a) Figure is given above

   b) Square

   c) One side is 4 unit. Perimeter is $4 \times 4 = 16$

   d) Area $4 \times 4 = 16$ sq.unit

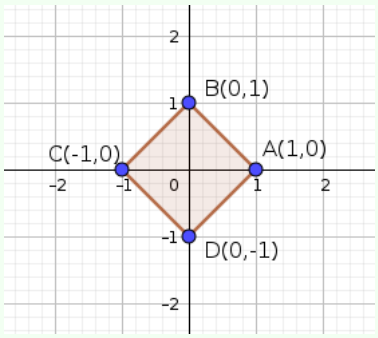
3) Draw the coordinate axes

a) Mark the points $A(1,0), B(0,-1), C(-1,0), D(0,-1)$

b) Suggest a suitable name to $ABCD$

c) Find the perimeter of $ABCD$

d) Calculate the area of $ABCD$



a) Figure is gfiven above

b) Square

c) One side is $\sqrt{2}$. Perimeter is $4\sqrt{2}$

d) Area $\sqrt{2} \times \sqrt{2} = 2$

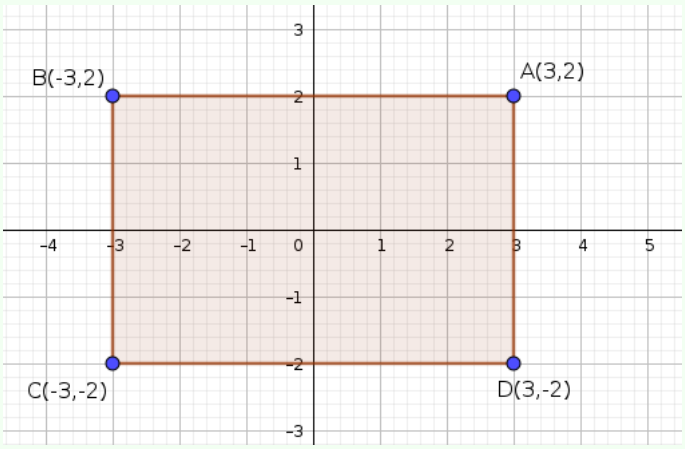
4) The vertices of $ABCD$ are $A(3,2), B(-3,2), C(-3,-2), D(3,-2)$

a) Draw coordinate axes and mark the points

b) Find the length of sides?

c) Calculate perimeter and area of $ABCD$

d) What is the length of its diagonal



a) Diagram is given above

b) $AB = CD = 6$, $AD = BC = 4$

c) Perimeter$= 2(6+4) = 20$, Area $= 6 \times 4 = 24$

d) Diagonal $= \sqrt{6^2 + 4^2} = \sqrt{52}$

5) Choose the correct answer

a) Which of the following is a point on x axis

(a) $(0,6)$ (b) $(-3,6)$ (c) $(-3,0)$ (d) $(1,1)$

b) What is the radius of the circle with centre $(0, 0)$ and passing through $(1, 1)$? 3

(a) $\sqrt{2}$ (b) $\sqrt{3}$ (c) $\sqrt{5}$ (d) 1

c) What is the distance between the points $(-7, 3)$ and $(10, 3)$

(a) 17 (b) 10 (c) 8 (d) 11

a) $(-3, 0)$

b) $\sqrt{2}$

c) $\sqrt{17}$

1

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 67 | Co ordinates 2 | Worksheet 67

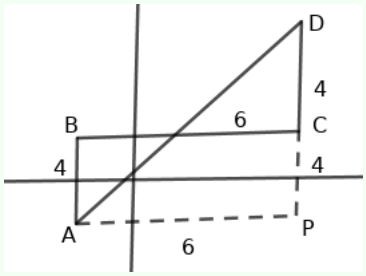
1) Draw coordinate axes and mark $A(-2,-2)$

a) Write the coordinates of B which is 4 unit away parallel to y axis in the upward direction.

b) Write the coordinates of C which is 6 unit in the right of B parallel to x axis

c) Write the coordinates of D which is 4 unit above C on the line parallel to y axis

d) What is the distance between A and D?



a) $B(-2,-2+4) = B(-2,2)$

b) $C(-2+6,2) = C(4,2)$

c) $D(4,2+4) = D(4,6)$

d) $AD = \sqrt{AP^2 + PD^2} = \sqrt{6^2+8^2} = 10$

2) $A(1,1), B(-3,1), C(-3,-4), D(1,-4)$ are the coordintes of the vertices of a rectangle.

a) What is the length of the side AB?

b) What is the length of the side AD?

c) Calcualte the perimetre and area of the rectangle.

a) $AB = |\ 1 - {}^{-}\ 3\ | = 4$

b) $AD = |\ 1 - {}^{-}\ 4\ | = 5$

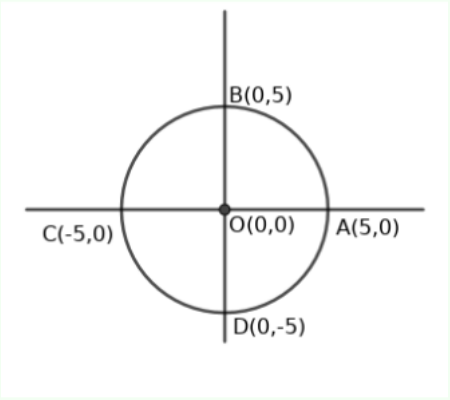
c) Perimetre$= 2(4+5) = 18$
Area $= 4 \times 5 = 20$

3) There is a circle with centre at the origin . The circle passes through $(5, 0)$ 2

a) What is the radius of the circle?

b) What are the coordinates of the points where the circle cut the axes?

c) Is $(3, 4)$ a point on the circle? How can we realize it?



a) 5

b) $A(5, 0), B(0, 5).C(-5, 0), D(0, -5)$

c) The distance from origin to the point $(3, 4)$ is $= \sqrt{3^2 + 4^2} = 5$, the radius of the circle. This point is on this circle.

4) The vertices of a right triangle are $A(1, 1), B(4, 1), C(1, 5)$.

a) Name the vertex at which 90° angle is taken

b) What is the length of perpendicular sides?

c) What is the length of its hypotenuse?

d) What is the radius of its circumcircle?

a) $A(1, 1)$

b) $AB = \mid 4 - 1 \mid = 3, AC = \mid 5 - 1 \mid = 4$

c) $BC = \sqrt{3^2 + 4^2} = 5$

d) Circumradius $= \frac{5}{2} = 2.5$

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 68 | Coordinates 3 | Worksheet 68

1) In $\triangle ABC$, $A(1,3), B(7,3), C(4,11)$ are the vertices

   a) What is the length of AB?

   b) What is the altitude to AB

   c) Calculate the area of $\triangle ABC$

   a) $AB = \mid 7 - 1 \mid = 6$

   b) $h = \mid 11 - 3 \mid = 8$

   c) Area $= \frac{1}{2} \times 6 \times 8 = 24$ sq.cm

2) $\triangle ABC$ is an equilateral triangle. Side AB coincides x axis. If $A(-1,0), B(5,0)$ then

   a) What is the length of AB?

   b) What is the altitude of the triangle?

   c) What are the coodinate pairs of C?

   a) $AB = \mid 5 - ^{-} 1 \mid = 6$

   b) Altitude $= 3\sqrt{3}$

   c) $C(2, 3\sqrt{3}), (C(2, -3\sqrt{3})$

3) Three vertices of $ABCD$ are $A(0,0), B(8,0) C(8,4)$

   a) Write the coordiantes of D

   b) Find the perimetre of the rectangle.

   c) Calculate the area of the rectangle.

   a) $D(0,4)$

   b) $AB = CD = 8, BC = AD = 4$
   Perimetre$= 2(8+4) = 24$

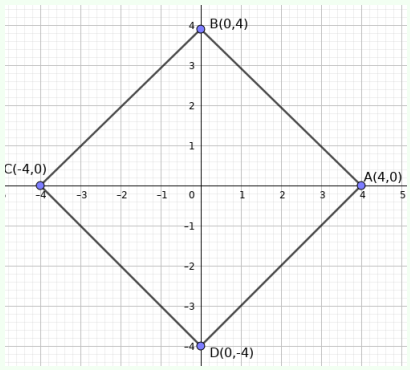
   c) Area $= 8 \times 4 = 32$sq.unit

4) $A(4,0), B(0,4), C(-4,0), D(0,-4)$ are the vertices of a quadrilateral

   a) Suggest a suitable name to $ABCD$

   b) Find the length of a side?

   c) Calcualte the area and perimetre



a) Square

b) $4\sqrt{2}$

c) Area $(4\sqrt{2})^2 = 32$ sq.unit, Perimetre $= 4 \times 4\sqrt{2} = 16\sqrt{2}$

5) In triangle ABC, $A(1,2), B(7,2)$ are two vertices.

a) What is the length of the side AB

b) In triangle ABC, $\angle A = 90°$.Write a pair of coordinates of C

c) What is the length of side AC?

d) Calculate the area of the triangle.

a) $AB = \mid 7 - 1 \mid = 6$

b) $C(1,5)$ or any other pair with x coordinate 1

c) If $C(1,5)$, $AC = \mid 5 - 2 \mid = 3$

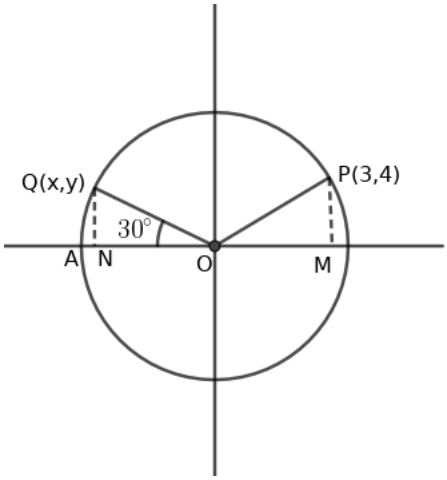
d) In the right triangle ABC with $A(1,2), B(7,2)$ and $C(1,5)$
Area $= \frac{1}{2} \times 6 \times 3 = 9$ sq.unit

1

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Session 69 | Coordinates 4 | Worksheet 69

1) $P(3,4)$ is a point in a circle with centre at the origin.
$Q(x,y)$ is another point on this circle ,$\angle AOQ = 30°$ then

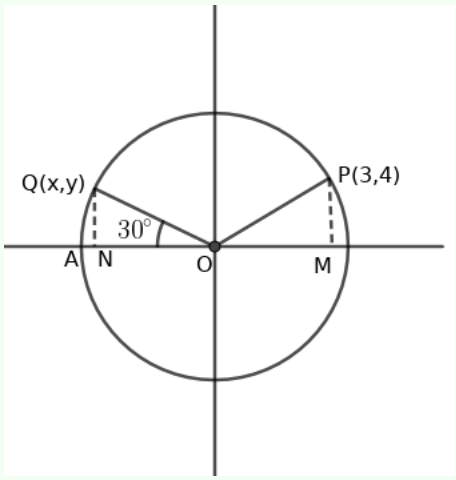


a) What is the radius of this circle?

b) What are the points where the circle cut the axes ?

c) Write the coordinates of Q

d) Write the coordinates of three more points on this circle.



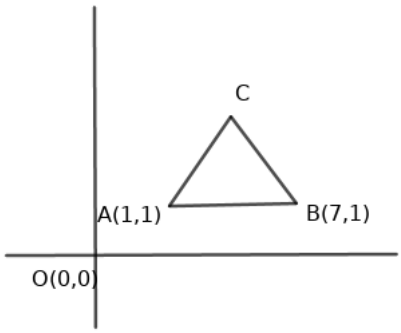
a) $OP = \sqrt{OM^2 + PM^2} = \sqrt{3^2 + 4^2} = 5$

b) $(5,0),(0,5),(-5,0),(0,-5)$

c) $\triangle ONQ$ is a $30° - 60° - 90°$ triangle
$OQ = 5, \therefore QN = \frac{5}{2}, ON = \frac{5}{2}\sqrt{3}$
$Q(-\frac{5}{2}\sqrt{3}, \frac{5}{2})$

d) $(-3,4),(-3,-4),(3,-4)$

2) ABC is an equilateral triangle. If $A(1,1), B(7,1)$then

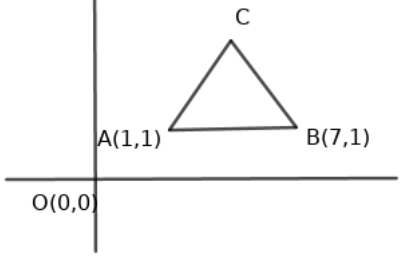


a) What is the length of one side?

b) What is the altitude of this triangle?

c) Write the coordinates of C

d) Calculate the area of the triangle.



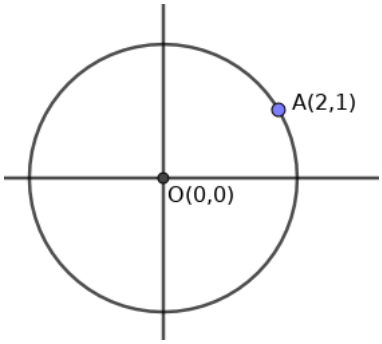
a) $AB = \mid 7-1 \mid = 6$

b) $3\sqrt{3}$

c) $C(1+3, 1+3\sqrt{3})$

d) Area $= \frac{1}{2} \times 6 \times 3\sqrt{3} = 9\sqrt{3}$

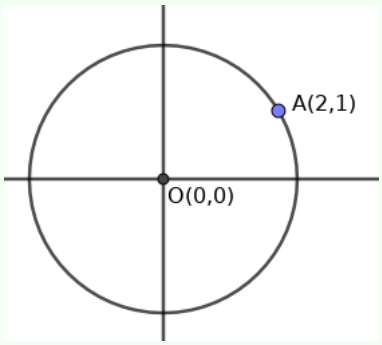
3) $(2,1)$ is a point on the circle with centre at the origin.



a) What is the radius of the circle?

b) What are the points where the circle cut the axes?

c) Write the coordinates of 7 more points on this circle.

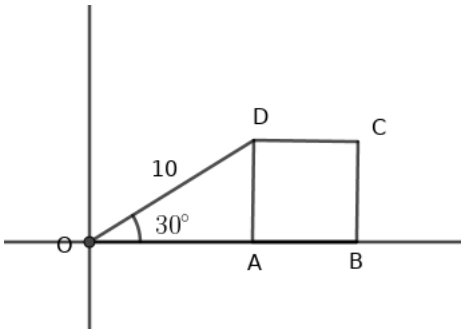


a) Radius $\sqrt{1^2+2^2}=\sqrt{5}$

b) $(\sqrt{5},0),(0,\sqrt{5}),(-\sqrt{5},0),(0,-\sqrt{5})$

c) $(-1,2),(-1,-2),(1,-2),(2,1),(-2,1),(-2,-1),(2,-1)$

4) In the figure $ABCD$ is a square. $OD=10, \angle AOD=30°$.



a) Write the coordinates of A

b) What is the length of one side of the square?

c) Write the coordinates of the vertices of the square.

a) $OA=5\sqrt{3}$
$A(5\sqrt{3},0)$

b) $AD=5$, Side is 5 unit

c) $A(5\sqrt{3},0), B(5+5\sqrt{3},0), C(5+5\sqrt{3},5), D(5\sqrt{3},5)$

[1]

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 70 | Coordinates 5 | Worksheet 70

1) Complete the following activities

   a) Draw coordinate axes and mark the points $P(x_1, y_1), Q(x_2, y_2)$

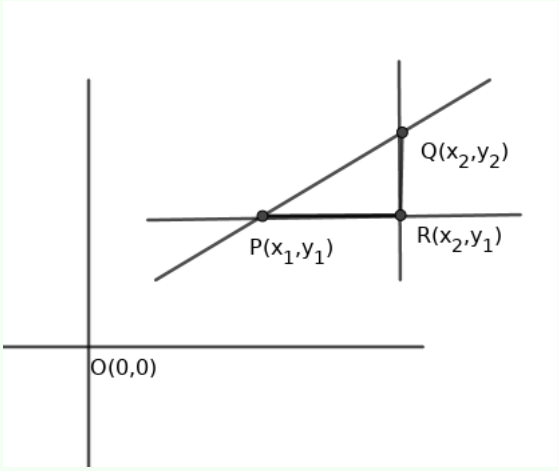
   b) Draw a line through P parallel to $x$axes, a line passing through Qparallel to $y$axis

   c) Mark the intersecting point as R

   d) Calculate the length PR and QR

   e) Prove that $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

a),b),c) see the figute



d) $PR = | x_2 - x_1 |, QR = | y_2 - y_1 |$

e) $PQ^2 = PR^2 + QR^2, PQ^2 = | x_2 - x_1 |^2 + | y_2 - y_1 |^2$
Note $| a |^2 = a^2$
$PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

2) Using the distance formula calculate the following.

   a) The distance between $P(-6, 7)$ and $Q(-1, -5)$

   b) What is the distance from origin to $(-5, 12)$

   c) Find the distance between $P(-7, -3)$ and ,$Q(-5, -11)$

a) $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
$PQ = \sqrt{(-1 - ^- 6)^2 + (-5 - 7)^2}$
$PQ = \sqrt{5^2 + (-12)^2} = \sqrt{169} = 13$

b) $O(0, 0), A(-5, 12)$
$OA = \sqrt{(-5 - 0)^2 + (12 - 0)^2} = \sqrt{25 + 144} = \sqrt{169} = 13$

c) $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
$PQ = \sqrt{(-5 - ^- 7)^2 + (-11 - ^- 3)^2} = \sqrt{2^2 + 8^2} = \sqrt{68}$

3) The distance between $A(2, y)$and $B(-4, 3)$ is 10unit

   a) Form an equation using the diatance formula

   b) What are the real numbers suitable for y?

   c) Write the coordinates of these points .

a) $AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.
$10 = \sqrt{(-4-2)^2 + (3-y)^2}$

b) Squaring on both sides $10^2 = (-6)^2 + (3-y)^2$
$100 - 36 = (3-y)^2$
$(3-y)^2 = 64, 3 - y = \pm\sqrt{64} = \pm 8$
If $3 - y = 8, y = -5$. If $3 - y = -8, y = 11$

c) $A(2, 11), B(-4, 3)$
$A(2, -5), B(-4, 3)$

4) Consider the points $A(1, -1), B(5, 2), C(9, 5)$

a) Find the distance AB ,BC and AC

b) Prove that these points are on a line.

c) What is the mid point of AC?

a) $AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$,$AB = \sqrt{(5-1)^2 + (2 -^- 1)^2} = \sqrt{16+9} = 5$
$BC = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$,$BC = \sqrt{(9-5)^2 + (5-2)^2} = \sqrt{16+9} = 5$
$AC = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$,$AC = \sqrt{(9-1)^2 + (5 -^- 1)^2} = \sqrt{64+36} = 10$

b) $AB + BC = 10, AC = 10 \rightarrow AB + BC = AC$
A, B, C are on a line

c) $AB = 5, BC = 5$. Therefore B is the mid point of AC

5) Choose the correct answer

a) What is the perimeter of the triangle having vertices $(1, 1), (4, 1)$ and $(1, 5)$

(a) 12 (b) 10 (c) 20 (d) 17

b) What is the radius of the circle with end points of the diameter are $(-1, 7)$ and $(7, 7)$

(a) 5 (b) 4 (c) 2 (d) 7

c) What is the altitude to the side AB in the triangle with verices $A(1, 1), B(6, 1), C(3, 7)$

(a) 6 (b) 4 (c) 2 (d) 6

a) 12

b) 4

c) 6

1

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 71 | Coordinates 6 | Worksheet 71

1) The distance from a point P on x axis to $A(7,6)$ and $B(-3,4)$ are equal

   a) What is the y coordinate of P

   b) Form an equation using the distance formula.

   c) Write the coordinates of P

   d) Find the sides of $\triangle ABP$.

   a) 0

   b) Distance from $P(x,0)$ to $A(7,6)$ is $= \sqrt{(x-7)^2+(0-6)^2}$
   Distance from $P(x,0)$ to $B(-3,4)$ is $= \sqrt{(x--3)^2+(0-4)^2}$

   c) Since $PA = PB$ then $\sqrt{(x-7)^2+(0-6)^2} = \sqrt{(x--3)^2+(0-4)^2}$
   squaring on both sides ,
   $(x-7)^2+36 = (x+3)^2+16, x^2-14x+49+36 = x^2+6x+9+16$
   $x = 3, P(3,0)$,

   d) $PA = \sqrt{7-3)^2+(6-0)^2} = \sqrt{4^2+6^2} = \sqrt{52}$
   $PB = \sqrt{52}$, $AB = \sqrt{7--3)^2+(6-4)^2} = \sqrt{104}$
   Since $PA^2+PB^2 = AB^2$, we can say ,this is an isosceles right angled triangle.

2) Consider the points $A(4,2), B(7,5), C(9,7)$

   a) Find the distances AB, BC and AC

   b) Can we construct $\triangle ABC$? why?

   c) Write the property of these points.

   a) $AB = \sqrt{(7-4)^2+(5-2)^2} = \sqrt{3^2+3^2} = \sqrt{18} = 3\sqrt{2}$
   $BC = \sqrt{(9-7)^2+(7-5)^2} = \sqrt{2^2+2^2} = \sqrt{8} = 2\sqrt{2}$
   $AC = \sqrt{(9-4)^2+(7-2)^2} = \sqrt{5^2+5^2} = \sqrt{50} = 5\sqrt{2}$

   b) The sum of two sides is not greater than the third side. Triangle cannot be constructed.

   c) $AB+BC = AC$. So, the points are on a line.

3) Consider the points $A(0,1), B(1,4), C(4,3), D(3,0)$

   a) Find the sides of $ABCD$

   b) Find the length of diagonals.

   c) Suggest a suitable name to this quadrilateral.

   a) $AB = \sqrt{(1-0)^2+(4-1)^2} = \sqrt{10}$
   $BC = \sqrt{(4-1)^2+(3-4)^2} = \sqrt{3^2+(-1)^2} = \sqrt{10}$
   $CD = \sqrt{(3-4)^2+(0-3)^2} = \sqrt{(-1)^2+(-3)^2} = \sqrt{10}$
   $AD = \sqrt{(0-3)^2+(1-0)^2} = \sqrt{(-3)^2+1^2} = \sqrt{10}$

   b) $AC = \sqrt{(4-0)^2+(3-1)^2} = \sqrt{4^2+2^2} = \sqrt{20}$
   $BD = \sqrt{(3-1)^2+(0-4)^2} = \sqrt{2^2+(-4)^2} = \sqrt{4+16} = \sqrt{20}$

   c) Sides are equal. Diagonals are equal .$ABCD$ is a square .

4) Consider the points $A(2,-2), B(14,10), C(11,13), D(-1,1)$ 2

a) Find the sides of $ABCD$

b) Find the length of the diagonals.

c) Suggest a suitable name to this quadrilateral.

a) $AB = \sqrt{(14-2)^2 + (10 -^- 2)^2} = \sqrt{12^2 + 12^2} = 12\sqrt{2}$
$BC = \sqrt{(11-14)^2 + (13-10)^2} = \sqrt{(-3)^2 + 3^2} = 3\sqrt{2}$
$CD = \sqrt{(-1-11)^2 + (1-13)^2} = \sqrt{(-12)^2 + (-12)^2} = 12\sqrt{2}$
$AD = \sqrt{(2 -^- 1)^2 + (-2 -^- 1)^2} = \sqrt{3^2 + (-3)^2} = 3\sqrt{2}$

b) $AC = \sqrt{(11-2)^2 + (13 -^- 2)^2} = \sqrt{9^2 + 15^2} = \sqrt{306}$
$BD = \sqrt{(14 -^- 1)^2 + (10-1)^2} = \sqrt{15^2 + 9^2} = \sqrt{306}$

c) $AB = CD, BC = AD$ opposite Sides are equal.
$AC = BD$Diagonals are equal. $ABCD$ is a rectangle.

5) Answer the following questions.

a) What is the diameter of the circumcircle of the triangle with vertices $(0,0), (1,0), (0,1)$

(a) 1 (b) 2 (c) $\sqrt{2}$ (d) $\sqrt{3}$

b) What is the altitude of the triangle with vertices $A(1,1)B(3,1)$ and $C(5,4)$

(a) 1 (b) 2 (c) 3 (d) $\sqrt{3}$

c) What is the fourth vertex of the parallelogram having a pair of opposite vertices are $(1,3), (4,4)$ and other vertex is $(3,3)$

(a) $(2,4)$ (b) $(4,2)$ (c) $(1,1)$ (d) $(2,2)$

a) $\sqrt{2}$

b) 3

c) $(2,4)$

1

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 72 | Coordinates 7 | Worksheet 72

1) Consider the points $A(2,3), B(3,4), C(5,6), D(4,5)$

a) Calculate the AB and CD

b) Calcualte AD and BC

c) Find the length of diagonals $ABCD$

d) Suggest a suitable name to $ABCD$.

a) $AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$.
$AB = \sqrt{(3-2)^2 + (4-3)^2} = \sqrt{2}$.
$CD = \sqrt{(4-5)^2 + (5-6)^2} = \sqrt{2}$

b) $AD = \sqrt{(4-2)^2 + (5-3)^2} = \sqrt{8} = 2\sqrt{2}$
$BC = \sqrt{(5-3)^2 + (6-4)^2} = \sqrt{8} = 2\sqrt{2}$

c) $AC = \sqrt{(5-2)^2 + (6-3)^2} = \sqrt{18} = 3\sqrt{2}$
$BD = \sqrt{(4-3)^2 + (5-4)^2} = \sqrt{2}$

d) $AB = CD, AD = BC$ opposite sides are equal
$AC \neq BD$ diagonals are not equal . $ABCD$is a parallelogram .

2) $\triangle OAB$ is an equilateral triangle. If $O(0,0), A(0,6)$then

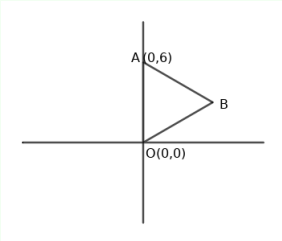
a) Draw a rough diagram

b) Find the length of one side .

c) Write a pair of coordinates of B

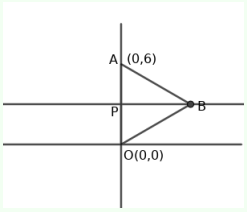
d) How many equailateral triangles are there satisfying this condition.

a) Look at the picture



b) $OA = \mid 6 - 0 \mid = 6$

c) Mid point of OA is $P(0,3)$
$\triangle BAP$is a $30° - 60° - 90°$triangle .$PA = 3, PB = 3\sqrt{3}$



Coordinates of B are $B(3\sqrt{3}, 3)$

d) Two eqilateral triangles are possible. Triangle with vertices $O(0,0), B(0,6), C(3\sqrt{3}, 3)$ and triangle with vertices $O(0,0), B(0,6), C(-3\sqrt{3}, 3)$

3) Vertices of a triangle are $A(8,6), B(8,-2), C(2,-2)$ 2

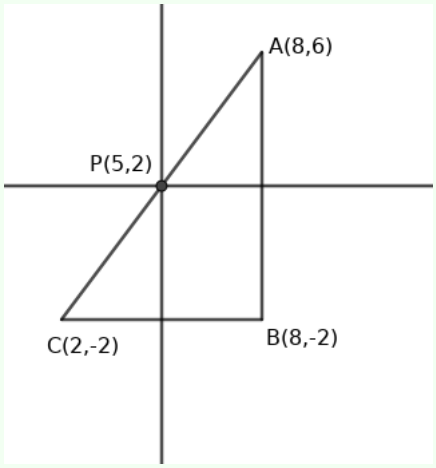
a) Find the centre of its circumcircle.

b) What is the radius of the circumcircle.

a) Let $P(x,y)$ be the circumcentre.$PA = \sqrt{(x-8)^2+(y-6)^2}$, $PB = \sqrt{(x-8)^2+(y+2)^2}, PC = \sqrt{(x-2)^2+(y+2)^2}$
$PA = PB = PC$
$\therefore PA^2 = PB^2 = PC^2$
$(x-8)^2+(y-6)^2 = (x-8)^2+(y+2)^2$
$x^2+y^2-16x-12y+100 = x^2+y^2-16x+4y+68, 16y = 32, y = 2$
$PB^2 = PC^2, (x-8)^2+(y+2)^2 = (x-2)^2+(y+2)^2, 12x = 60, x = 5$
$P(5,2)$

b) Radius $= \sqrt{(5-8)^2+(2-6)^2} = 5$

See the picture.



4) $A(-3,0), B(1,-3), C(4,1)$ are the vertices of a triangle.

a) Find the length of its sides

b) Prove that $\triangle ABC$is an isosceles right triangle.

c) calculate the area of this triangle.

a) $AB = \sqrt{(1--3)^2+(-3-0)^2} = \sqrt{4^2+(-3)^2} = 5$
$BC = \sqrt{(4-1)^2+(1+3)^2} = 5$
$AC = 5\sqrt{2}$

b) $AB = BC$ This is an isosceles triangle. $AB^2+BC^2 = 25+25 = 50, AC^2 = (5\sqrt{2})^2 = 50$
$AB^2+BC^2 = AC^2$
This is a right triangle . Isoscelest right traingle.

c) Area $= \frac{1}{2} \times 5 \times 5 = \frac{25}{2}$

1

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 73 | Coordinates 8 | Worksheet 73

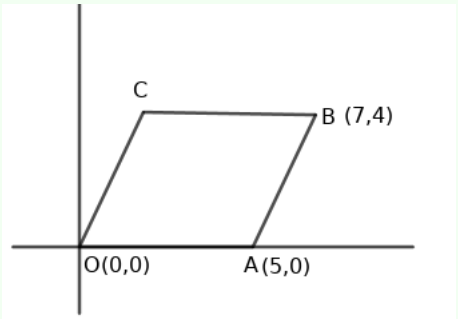
1) $OABC$ is a parallelogram . If $O(0,0), A(5,0), B(7,4)$ then

   a) Draw a rough diagram

   b) Write the coordinates of C

   c) Calculate the area of the parallelogram.

   a) Look at the picture

   b) Side OA is parallel to BC. Therefore the difference of x coordinates of O, A is same as the difference of x coordinates of B and C
   Similarly in the case of y coordinates
   $C(7-5,4) = C(2,4)$

   c) Area $= 5 \times 4 = 20$

2) In the trapezium $ABCD$, $A(8,5), B(-8,5), C(-5,-3), D(5,-3)$ then

   a) Find the length of parallel sides

   b) What is the distance between parallel sides ?

   c) Calculate the area of the trapezium

   a) y coodinates of A and B are equal. Line AB is parallel to x axis. y coordinates of C and D are equal. CD is parallel to x.
   That is AB is parallel to CD. $AB = |\ 8 - ^{-}\ 8\ | = 16$, $CD = |\ 5 - ^{-}\ 5\ | = 10$

   b) Distance between AB and CD is $|\ 5 - ^{-}\ 3\ | = 8$

   c) Area $= \frac{1}{2} \times 8(16+10) = 4 \times 26 = 104$

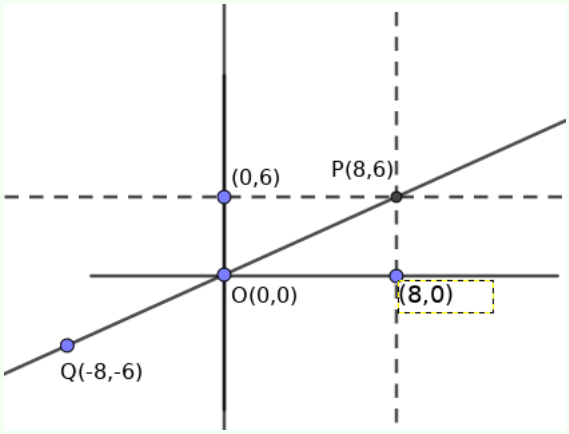
3) Draw a line parallel to x axis passing through $(0,6)$. Draw another line parallel to y axis passing through $(8,0)$.

   a) Find the coordinates of the intersecting point P

   c) What is the distance from origin to P.

   d) Write the coordinates of one more point on this line other than origin.

a) $P(8,6)$ Look at the picture



b) $OP = \sqrt{8^2 + 6^2} = 10$

c) $Q(-8,-6)$

4) ABC is an equilateral triangle. If $A(3,2), B(7,2)$then

a) Find the length of its sides.

b) What is the altitude of the triangle?

c) Find the suitable coordinate pairs of C

d) Calculate the area of the triangle.

a) $AB = \mid 7 - 3 \mid = 4$

b) Altitude$= 2\sqrt{3}$

c) $C(3+2, 2+2\sqrt{3})$ or $C(3+2, -(2\sqrt{3}-2))$
$(5, 2 = 2\sqrt{3})$or $(5, 2 - 2\sqrt{3}$

d) Area $= \frac{1}{2} \times 4 \times 2\sqrt{3} = 4\sqrt{3}$

5) $P(2,-1), Q(3,4), R(-2,3), S(-3,-2)$ are the vertices of a quadrilateral.

a) Find the length of sides .

b) What is the length of its diagonals?

c) Suggest a suitable name to this quadrilateral.

d) Calculate the area .

a) $PQ = \sqrt{(3-2)^2 + (4+1)^2} = \sqrt{26}$
$QR = \sqrt{(-2-3)^2 + (3-4)^2} = \sqrt{26}$
$RS = \sqrt{(-3+2)^2 + (-2-3)^2} = \sqrt{26}$
$SP = \sqrt{(-3-2)^2 + (-2+1)^2} = \sqrt{26}$

b) Diagonals $PR = \sqrt{(-2-2)^2 + (3+1)^2} = 4\sqrt{2}$
$QS = \sqrt{(-3-3)^2 + (-2-4)^2} = 6\sqrt{2}$

c) $PQ = QR = RS = SP$
$PR \neq QS$ .This is a rhombus

d) Area $= \frac{1}{2} \times d_1 \times d_2 = 24$ sq.unit

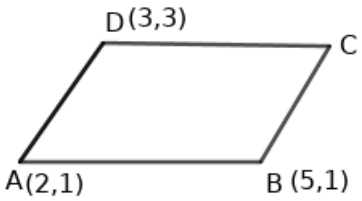
[1]

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Wisgrow Math A - Plus

Session 74 | Coordinates 9 | Worksheet 74

1) In the figure $ABCD$ is a parallelogram.If $A(2,1), B(5,1), D(3,3)$then



a) Write the coordinates of C

b) Find the length of side AB and the distance between the parallel sides AB and CD

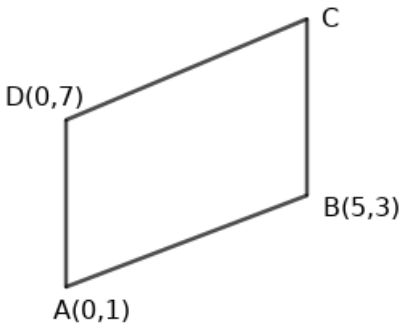
c) Calculate the area of the parallelogram.

a) AB is parallel to CD
The change in the x coordinates of A and B is same as the change in the x coordinates of C and D.
Change in the y coordinates of A and B is same as the change in the y coodrinates of C and D
$C(3+3,3) = C(6,3)$

b) $AB = \mid 5-2 \mid = 3$
Distance between the parallel sides $= \mid 3-1 \mid = 2$

c) Area $= 3 \times 2 = 6$

2) In the parallelogram $ABCD$, if $A(0,1), B(5,3), D(0,7)$then



a) Write the coordinates of C

b) What is the diatance between the sides AD and BC

c) Calculate the area of the parallelogram

a) AD is parallel to BC
The difference in the x coordinates of A and D is same as that of B and C. It is zero.
The difference in the y coordinates of A and D is same as that of B and C. It is 6.
$C(5, 3+6) = C(5, 9)$

b) Distance $=\mid 5-0 \mid = 5$

c) Area $= 6 \times 5 = 30$

3) $ABCDEF$ is a regular hexagon. If $A(-4,0), B(4,0)$then

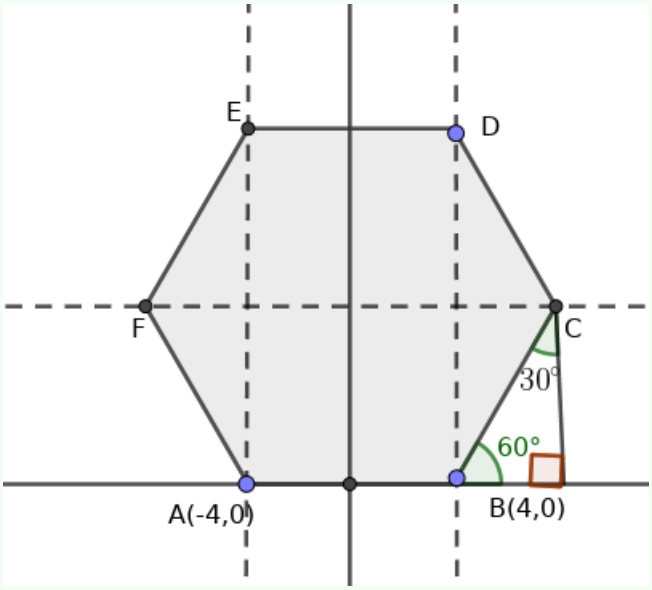
a) Draw the diagram

b) Find the length of one side

c) Write the coordiantes of other vertices

d) Calcualte the area of the hexagon.

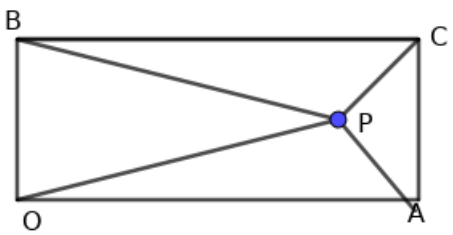
a) see the picture



b) $AB = \mid 4 - ^{-} 4 \mid = 8$

c) $\triangle BPC$ is a $30° - 60° - 90°$ triangle.(Mark P in the figure . It is the foot of the perpen dicular from C to x axis)
$BC = 8, BP = 4, PC = 4\sqrt{3}$
$C(8, 4\sqrt{3}), F(-8, 4\sqrt{3}), D(4, 8\sqrt{3}), E(-4, 8\sqrt{3})$

4) $OACB$ is a rectangle.

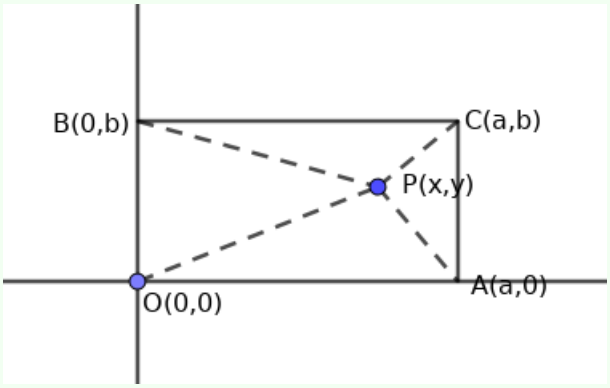


a) Draw coordinate axes with O as the origin 3

b) If $a$is the length and b is the breadth , write the coordiante of the vertices

c) If P is a point inside the rectangle then prove that $PA^2 + PC^2 = PB^2 + PD^2$.

a,b) see the picture



c) $OP^2 + CP^2 = x^2 + y^2 + (x-a)^2 + (y-b)^2$
$= 2x^2 + 2y^2 - 2ax - 2by + a^2 + b^2$
$PA^2 + PB^2 = (x-a)^2 + y^2 + (x-a)^2 + (y-b)^2$
$= 2x^2 + 2y^2 - 2ax - 2by + a^2 + b^2$
$OP^2 + CP^2 = PA^2 + PB^2$

1

[1]John P A, jpavpz@gmail.com, sjpuzzles@gmail.com ,9847307721

Evaluation

Mathematics X

Scores 25

Times 1 hour

Choose the correct answer. 1mark each

1) Which of the following is a point on x axis

(a) $(7,0)$ (b) $(0,7)$ (c) $(7,7)$ (d) $(0,-7)$

Answers

Ans :$(7,0)$

2) The line parallel to x axis passing through $(0,3)$ and parallel to y axis passing through $(3,0)$ intersect at P.What is the distance from origin to P?

(a) $3\sqrt{3}$ (b) $3\sqrt{2}$ (c) 3 (d) $\sqrt{3}$

Answers

Ans :$3\sqrt{2}$

3) What is the distance between the points $(-3,2)$ and $(3,2)$

(a) 4 (b) 7 (c) 6 (d) 5

Answers

Ans : 6

Questions from 4 to 5 carries 2 mark each

4) The vertices of a square are $(3,0),(0,3),(-3,0),(0,-3)$

a) What is the length of a side ?

b) Find the area of the square.

Answers

a) $3\sqrt{2}$

b) Area $= (3\sqrt{2})^2 = 9 \times 2 = 18$

5) $A(8,6)$ is a point on a circle with center at the origin.

a) What is the radius of this circle?

b) What are the points at which the circle cut the axes?

Answers

a) Radius $= \sqrt{8^2 + 6^2} = \sqrt{100} = 10$

b) $(10, 0), (0, 10), (-10, 0), (0, -10)$

Questions from 6 to 8 carries 3 each

6) Consider the points $A(7, 6)$ and $B(-3, 4)$

a) If$P(x, y)$ is a point on x axis then what is y?

b) If $PA = PB$ then write the equation using the co-cordinates

c) Find the coordinates of the point P on x axis equidistant from A and B

Answers

a) $y = 0$

b) $\sqrt{(x-7)^2 + (0-6)^2} = \sqrt{(x-^-3)^2 + (0-4)^2}$
$(x-7)^2 + 36 = (x+3)^2 + 16$
$x^2 - 14x + 49 + 36 = x^2 + 6x + 9 + 16$

c) Simplifying $20x = 60, x = 3$. The point on x axis is $P(3, 0)$

7) In triangle ABC , $A(-3, 2), B(5, 2)$ and $C(2, 7)$

a) What is the length of the side AB?

b) What is the altitude to AB ?

c) Calculate the area of $\triangle ABC$

Answers

a) $AB = \mid 5 - (-3) \mid = 8$

b) Altitude is $\mid 7 - 2 \mid = 5$

c) Area $= \frac{1}{2} \times 8 \times 5 = 20$

8) Consider the points $A(1, -1), B(5, 2), C(9, 5)$

a) Find the distance AB and BC

b) Find the distance AC

c) Are the points A, B, C on a line?

Answers

a) $AB = \sqrt{(5-1)^2 + (2+1)^2} = 5$, $BC = \sqrt{(9-5)^2 + (5-2)^2} = 5$

b) $AC = \sqrt{(9-1)^2 + (5+1)^2} = 10$

c) $AC = AB + BC$. The points are on a line

Question 9 carries 4 score

9) $A(0,1), B(1,4), C(4,3)$ and $D(3,0)$ are the vertices of a quadrilatearl

a) Find the length of its sides

b) Calculate the length of diagonals

c) Suggest a suitable name to this quadrilatearl

Answers

a) $AB = \sqrt{(1-0)^2+(4-1)^2} = \sqrt{10}$
$BC = \sqrt{(4-1)^2+(3-4)^2} = \sqrt{10}$
$CD = \sqrt{(3-4)^2+(0-3)^2} = \sqrt{10}$
$AD = \sqrt{(3-0)^2+(0-1)^2} = \sqrt{10}$

b) $AC = \sqrt{(4-0)^2+(3-1)^2} = \sqrt{25} = 5$
$BD = \sqrt{(3-1)^2+(0-4)^2} = \sqrt{25} = 5$

c) Sides are equal . Diagonals are equal. It is a square

Question 10 carries 5 marks

10) The trigonometric table given in the text book gives $\sin$ measure , $\cos$ measure and $\tan$ measure of angles from 0 to 90 degree.
It can be noted that $\sin$ measure increases from 0 to 1 as the angle increases from 0 to $90°$.
$\cos$ measures decreases from 1 to 0 as the angle incresases ftom 0 to $90°$.
If the sum of two angles is $90°$ then $\sin$ of one angle is equal to $\cos$ of other angle. $\sin 90° = \cos 0° = 1$ and $\sin 0° = \cos 90° = 0$.
Also, the maximum value of $\sin$ and $\cos$ is 1

a) If $\sin A = \cos A$ then what is A?

b) If $\sin X = \cos Y$ then what is $X + Y$?

c) $\sin + \sin B + \sin C = 3$ then what is $\cos A + \cos B + \cos C$?

d) What is the product $\cos 1° \times \cos 2° \times \cos 3° \times \cdots \cos 90°$?

Answers

a) $45°$

b) $90°$

c) 0

d) 0

1