

# 8 | Introduction to Coordinates

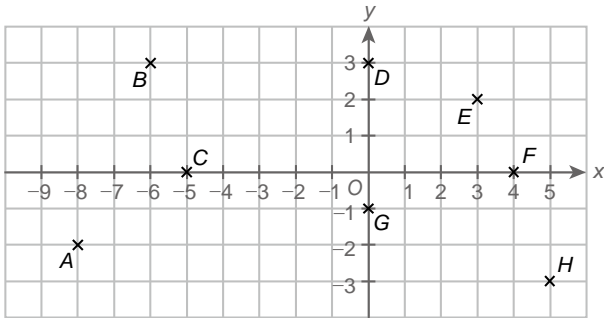
Name : \_\_\_\_\_ ( )

Class : \_\_\_\_\_ Date : \_\_\_\_\_

## Worksheet for Classworks — §8.2

### Classwork 8.1 (page 8.7)

The figure shows points *A* to *H* on a rectangular coordinate plane.



- (a) Write down the coordinates of the points in the figure.
- (b) Which points have the *x*-coordinates equal to 0?
- (c) Which points have the *y*-coordinates equal to 0?

*Solution:*

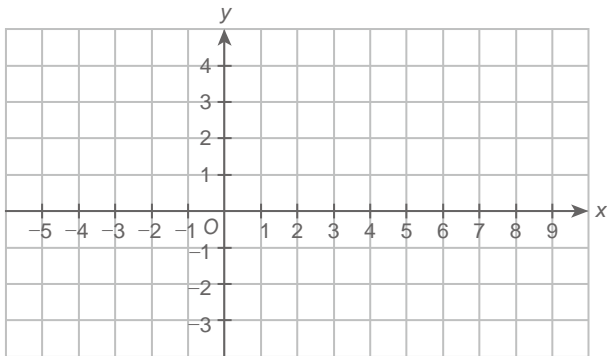
- (a) *A*(\_\_\_\_, \_\_\_\_), *B*(\_\_\_\_, \_\_\_\_), *C*(\_\_\_\_, \_\_\_\_), *D*(\_\_\_\_, \_\_\_\_),  
*E*(\_\_\_\_, \_\_\_\_), *F*(\_\_\_\_, \_\_\_\_), *G*(\_\_\_\_, \_\_\_\_), *H*(\_\_\_\_, \_\_\_\_)

(b)

(c)

**Classwork 8.2** (page 8.8)

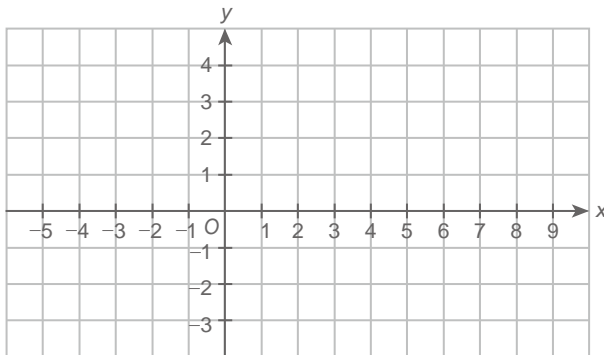
(a) Plot three points  $A(4, 3)$ ,  $B(4, 0)$  and  $C(4, -2)$  on a rectangular coordinate plane.



- (b) Join  $AB$  and join  $BC$ . Are  $A$ ,  $B$  and  $C$  collinear?
- (c) Which coordinate axis is parallel to the line segment  $AC$ ?

*Solution:*

(a), (b)

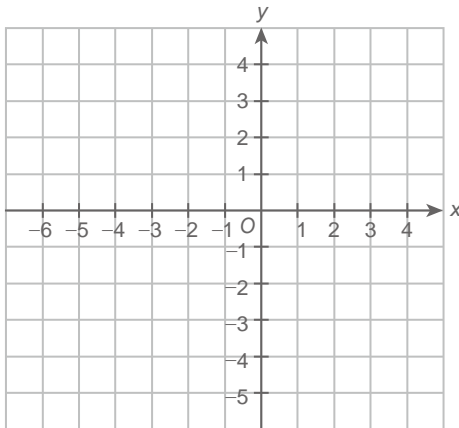


(c)

**Classwork 8.3** (page 8.9)

(a) Plot the following points on a rectangular coordinate plane.

$A(-1, 2)$ ,  $B(1, 0)$ ,  $C(4, 3)$ ,  $D(2, -4)$ ,  $E(0, -2)$ ,  $F(-1, -3)$ ,  $G(-2, -2)$ ,  $H(-4, -4)$ ,  $I(-6, 3)$ ,  $J(-3, 0)$

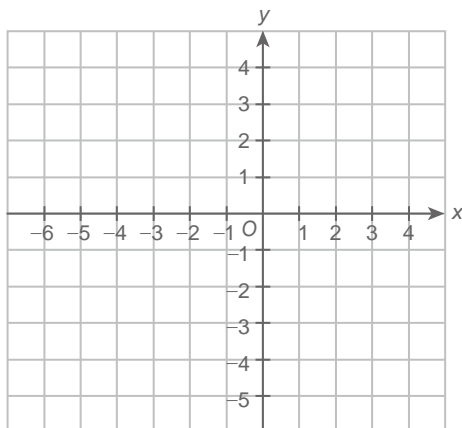


(b) Join the points according to the order  $A, B, C, D, E, F, G, H, I, J, A$ .

(c) Write down the points lying in each quadrant.

*Solution:*

(a), (b)



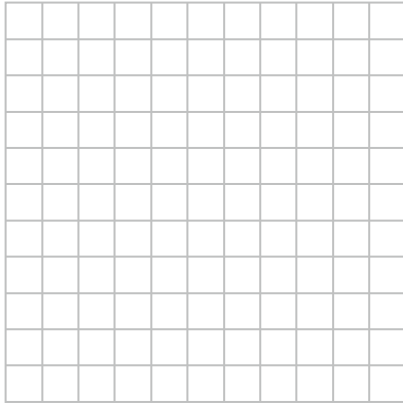
(c)

**Classwork 8.4** (page 8.11)

- (a) Plot four points  $P(-2, 0.5)$ ,  $Q(0, -3.5)$ ,  $R(1.5, 1)$  and  $S(-2.5, -3)$  on a rectangular coordinate plane.
- (b) Join  $PQ$  and join  $RS$ .
- (c) Write down the coordinates of the intersection of  $PQ$  and  $RS$ .

*Solution:*

(a), (b)



(c)

**8** | Introduction to Coordinates

Name : \_\_\_\_\_ ( )

Class : \_\_\_\_\_ Date : \_\_\_\_\_

**Worksheet for Classworks — §8.3****Classwork 8.5** (page 8.18)

In each of the following, find the distance between the two given points.

(a)  $P(-2, 11), Q(13, 11)$

Solution:

$PQ = \text{_____ units}$

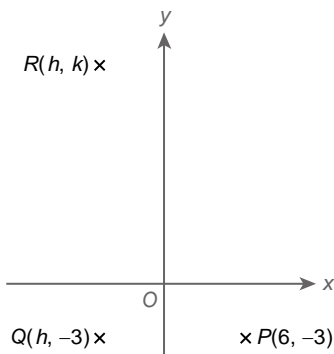
$= \text{_____ units}$

(b)  $R(-1, -24), S(-1, -16)$

Solution:

$RS = \text{_____ units}$

$= \text{_____ units}$

**Classwork 8.6** (page 8.18)In the figure, the distance between  $P$  and  $Q$  is 11 units, and the distance between  $Q$  and  $R$  is 16 units.

(a) Find the value of  $h$ .

(b) Find the value of  $k$ .

Solution:

(a)  $PQ = 11$  units

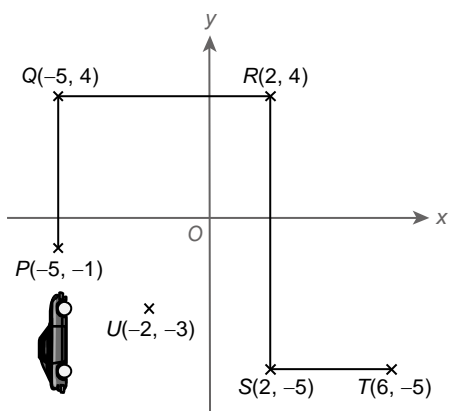
$\text{_____} - h = 11$

$h = \text{_____}$

**(b)**

**Classwork 8.7** (page 8.19)

In the figure, a model car starts to move from  $P$  to  $T$  along line segments  $PQ$ ,  $QR$ ,  $RS$  and  $ST$ .



**(a)** Find the total distance travelled by the model car.

★ **(b)** It is known that the coordinates of  $U$  are  $(-2, -3)$ . Find the perpendicular distance from  $U$  to  $QR$ .

*Solution:*

**(a)**

**(b)**

# 8 Introduction to Coordinates

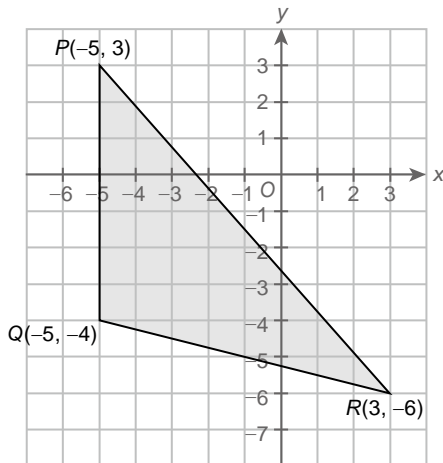
Name: \_\_\_\_\_ ( )

Class: \_\_\_\_\_ Date: \_\_\_\_\_

## Worksheet for Classworks — §8.4

### Classwork 8.8 (page 8.25)

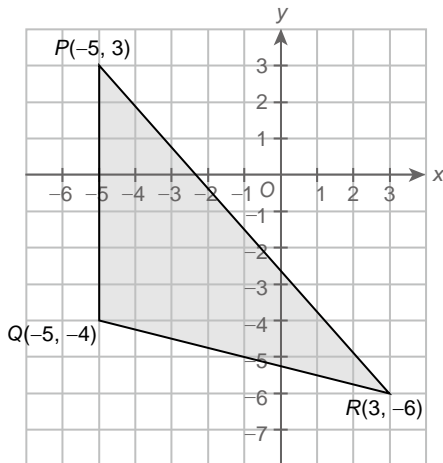
Consider the figure.



- (a) Find the perpendicular distance from  $R$  to  $PQ$  produced.
- (b) Find the area of  $\triangle PQR$ .

*Solution:*

- (a) Draw a point  $S$  on  $PQ$  produced such that  $RS \perp SQP$ .





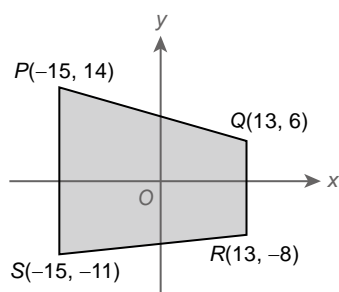
(b)  $PQ =$  \_\_\_\_\_ units

$=$  \_\_\_\_\_ units

$\therefore$  Area of  $\triangle PQR =$

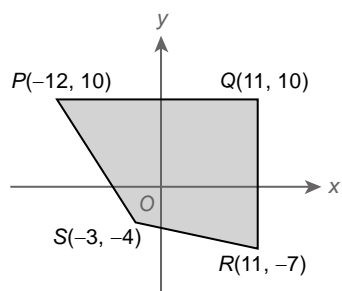
**Classwork 8.9** (page 8.26)

Find the area of trapezium  $PQRS$  in the figure.



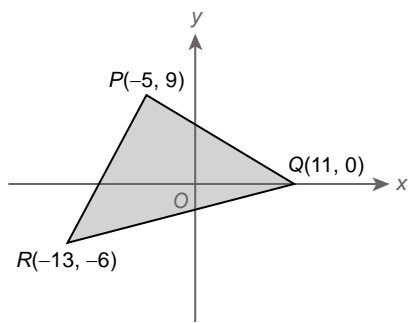
**Classwork 8.10** (page 8.27)

Find the area of quadrilateral  $PQRS$  in the figure.



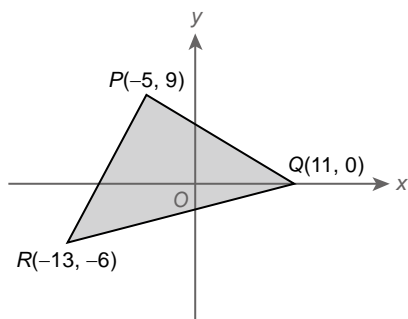
**Classwork 8.11** (page 8.28)

Find the area of  $\triangle PQR$  in the figure.



*Solution:*

Draw a rectangle  $ABRC$  such that  $AC$  and  $BR$  are horizontal line segments,  $AB$  and  $CR$  are vertical line segments.



# 8 | Introduction to Coordinates

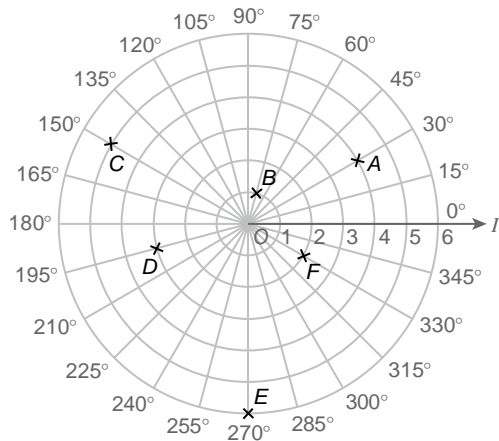
Name : \_\_\_\_\_ ( )

Class : \_\_\_\_\_ Date : \_\_\_\_\_

## Worksheet for Classworks — §8.5

### Classwork 8.12 (page 8.36)

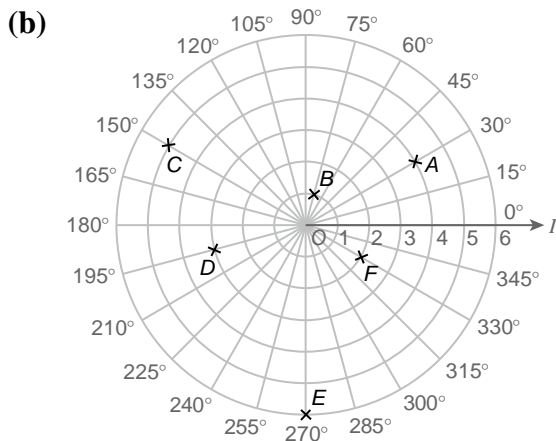
The figure shows a polar coordinate plane.



- (a) Write down the polar coordinates of points A to F in the figure.
- (b) Plot  $P(3, 105^\circ)$  and  $Q(2, 255^\circ)$  on the polar coordinate plane.
- (c) Find  $\angle AOP$  and  $\angle COQ$ .
- (d) Find the lengths of  $BQ$  and  $CF$ .

*Solution:*

- (a)  $A(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ ,  $B(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ ,  $C(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ ,  
 $D(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ ,  $E(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ ,  $F(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$



(c)  $\angle AOP = \underline{\hspace{2cm}} - \underline{\hspace{2cm}}$   
 $\hspace{1.5cm} = \underline{\hspace{2cm}}$

(d)

# 8 | Introduction to Coordinates

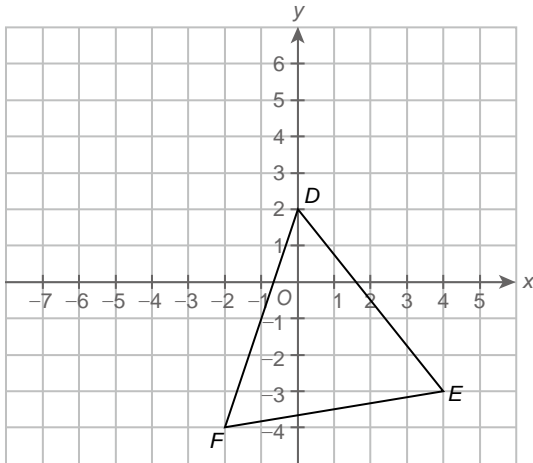
Name: \_\_\_\_\_ ( )

Class: \_\_\_\_\_ Date: \_\_\_\_\_

## Worksheet for Classworks — §8.6

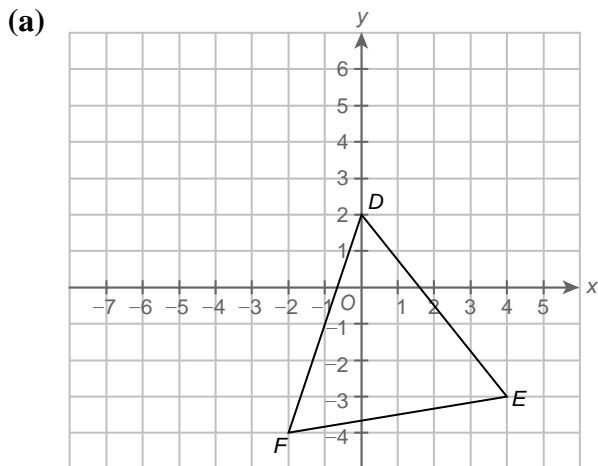
### Classwork 8.13 (page 8.42)

In the figure,  $\triangle DEF$  is translated leftwards by 4 units and upwards by 3 units to obtain the image  $\triangle D'E'F'$ .



- (a) Draw  $\triangle D'E'F'$  in the figure.
- (b) Find the coordinates of the vertices of  $\triangle D'E'F'$ .

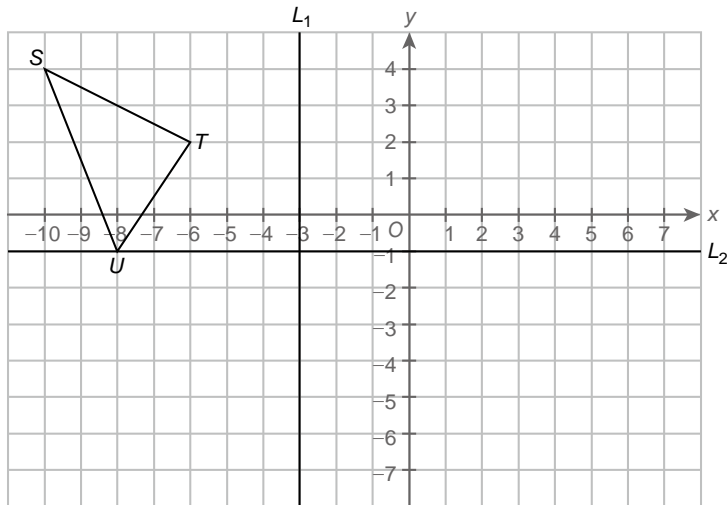
*Solution:*



- (b) Coordinates of  $D'$  = (\_\_\_\_\_, \_\_\_\_\_)
- Coordinates of  $E'$  = (\_\_\_\_\_, \_\_\_\_\_)
- Coordinates of  $F'$  = (\_\_\_\_\_, \_\_\_\_\_)

**Classwork 8.14** (page 8.45)

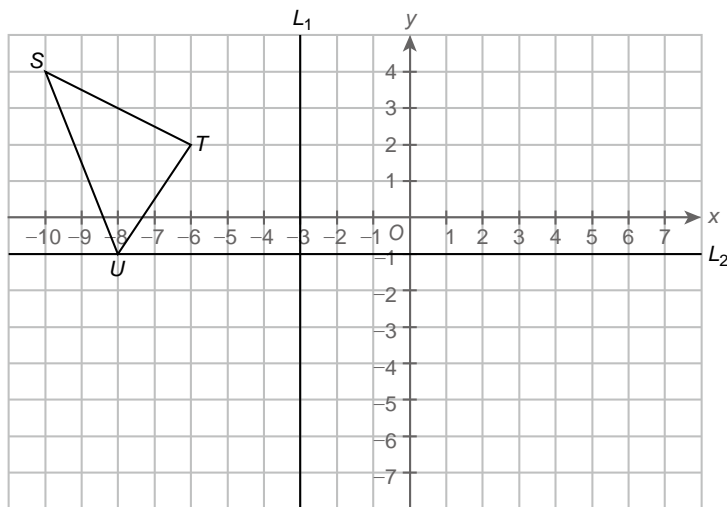
- (a) In the figure,  $\Delta STU$  is reflected with respect to straight line  $L_1$  to obtain the image  $\Delta S_1T_1U_1$ . Draw  $\Delta S_1T_1U_1$  in the figure.



- (b) If  $\Delta S_2T_2U_2$  is the reflection image of  $\Delta S_1T_1U_1$  with respect to straight line  $L_2$ , draw  $\Delta S_2T_2U_2$  on the rectangular coordinate plane in (a).
- (c) Find the coordinates of  $T_2$ .

*Solution:*

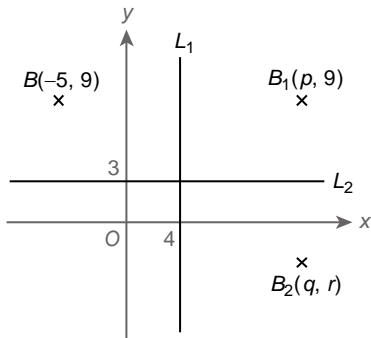
- (a), (b)



- (c)

**Classwork 8.15** (page 8.46)

★★ In the figure,  $L_1$  and  $L_2$  are the vertical line and horizontal line respectively.  $B(-5, 9)$  is reflected with respect to  $L_1$  to  $B_1(p, 9)$ , and  $B_1$  is reflected with respect to  $L_2$  to  $B_2(q, r)$ . Find the values of  $p$ ,  $q$  and  $r$ .



*Solution:*

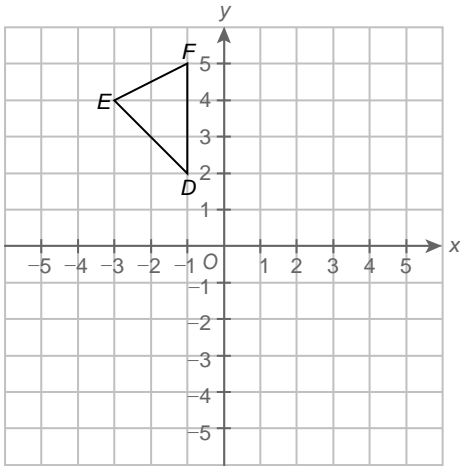
Perpendicular distance from  $B$  to  $L_1 =$  \_\_\_\_\_ units

$=$  \_\_\_\_\_ units



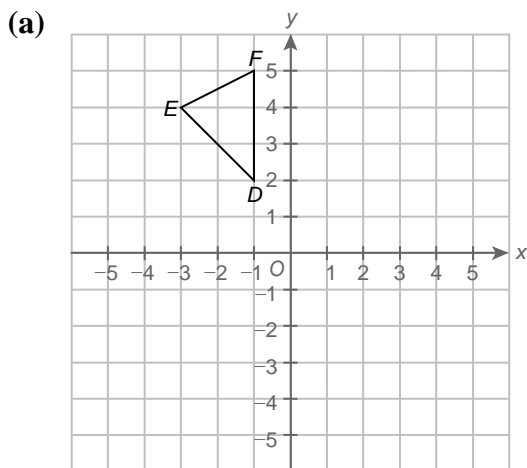
**Classwork 8.16** (page 8.55)

Consider  $\triangle DEF$  in the figure.  $\triangle DEF$  is rotated about the origin through  $180^\circ$  to obtain the image  $\triangle D_1E_1F_1$ .  $\triangle D_1E_1F_1$  is then reflected with respect to the  $y$ -axis to obtain the image  $\triangle D_2E_2F_2$ .



- (a) Draw  $\triangle D_1E_1F_1$  and  $\triangle D_2E_2F_2$  in the figure.
- (b) If  $\triangle DEF$  can undergo 1 transformation to  $\triangle D_2E_2F_2$ , describe the transformation.

*Solution:*



(b)