



# Hyperbolic Geometry

NAME: .....

CLASS: .....

DATE: .....



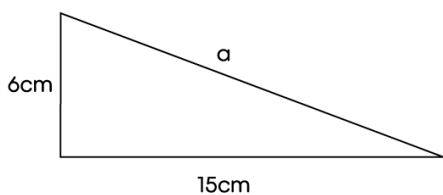
## Basic

1) Complete the following table by filling in the appropriate properties of each shape.

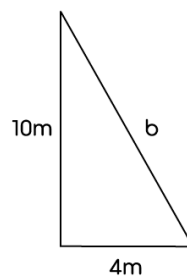
	Square	Rhombus	Rectangle	Parallelogram	Regular pentagon	Regular hexagon
Axes of symmetry						
Order of rotation						
All sides equal						
Opposite sides equal						
Opposite sides parallel						

2) Using Pythagoras' Theorem, calculate the length of the missing sides of these right-angled triangles.

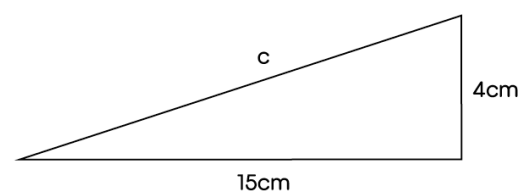
a)



b)

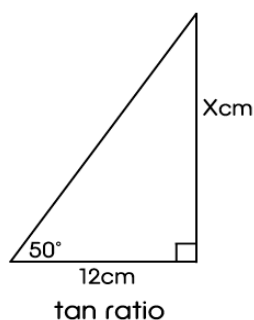


c)

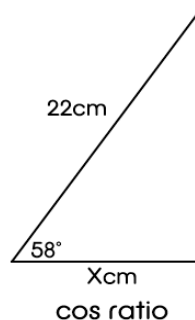


3) Using the given trig ratio, calculate the length of the side labelled  $x$ .

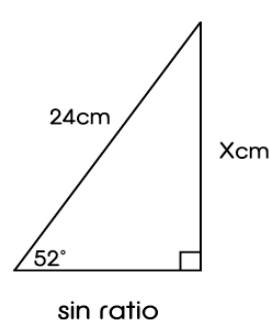
a)



b)



c)



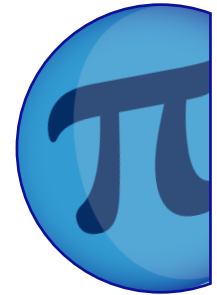


# Hyperbolic Geometry

NAME: .....

CLASS: .....

DATE: .....



## Core

1) On the coordinate grid, draw the graphs of the following relationships between the  $x$  and  $y$  coordinates.

a)  $y = 2x - 3$

b)  $y = 2x + 3$

c)  $y = 2x$

2) On the coordinate grid, draw the graphs of the following relationships between the  $x$  and  $y$  coordinates.

a)  $y = x^2$

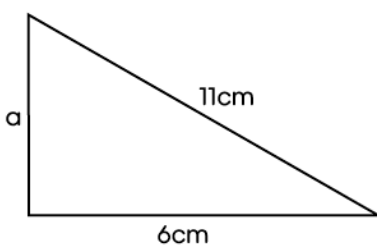
b)  $y = x^2 - 4$

c)  $y = x^2 + 4$

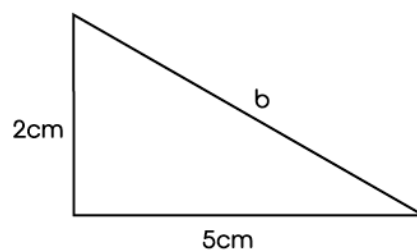
Discuss the similarities between the graphs.

3) Calculate the length of the missing side of these right-angled triangles.

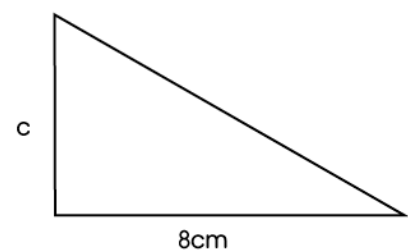
a)



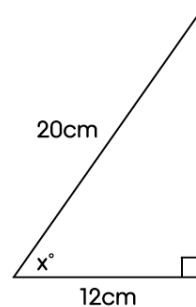
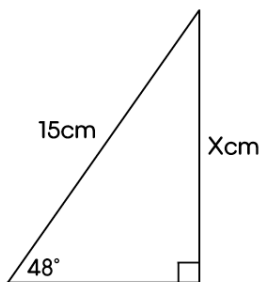
b)



c)



4) Calculate the value of  $x$ .



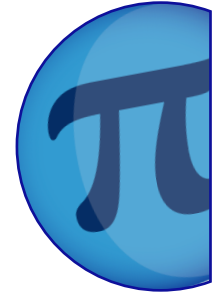


# Hyperbolic Geometry

NAME: .....

CLASS: .....

DATE: .....



## Advanced

1) On the coordinate grid, draw the graphs of the following relationships between the  $x$  and  $y$  coordinates.

a)  $y = 2x - 3$

b)  $y = 2x + 3$

c)  $y = 2x$

2) On the coordinate grid, draw the graphs of the following relationships between the  $x$  and  $y$  coordinates.

a)  $y = x^2$

b)  $y = x^2 - 4$

c)  $y = x^2 + 4$

Discuss the similarities between the graphs.

3) On the coordinate grid, draw the graphs of the following relationships between the  $x$  and  $y$  coordinates.

a)  $y = x^3$

b)  $y = x^3 - 5$

c)  $y = x^3 + 5$

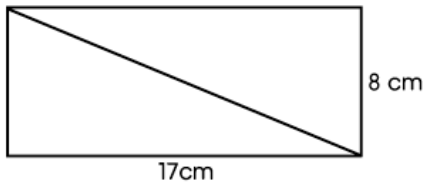
Discuss the similarities between the graphs.



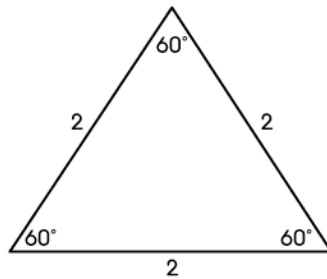
# Hyperbolic Geometry

## Advanced

4) Find the sizes of all the angles in the rectangle shown and the length of the diagonal.



5) Using the given equilateral triangle, calculate an exact value for:



a)  $\sin 60^\circ$

b)  $\cos 60^\circ$

c)  $\tan 60^\circ$

d)  $\sin 30^\circ$

e)  $\cos 30^\circ$

f)  $\tan 30^\circ$



# Hyperbolic Geometry

## ANSWERS

### Basic

1)

	Square	Rhombus	Rectangle	Parallelogram	Regular pentagon	Regular hexagon
Axes of symmetry	4	2	2	0	5	6
Order of rotation	4	2	2	2	5	6
All sides equal	yes	yes	no	no	yes	yes
Opposite sides equal	yes	yes	yes	yes	no	yes
Opposite sides parallel	yes	yes	yes	yes	no	yes

2) a) 16.2cm

b) 10.8m

c) 15.5cm

3) a) 14.3cm

b) 11.7cm

c) 18.9cm

### Core

1) & 2) Discussion: Each set of relationships is parallel.

3) a) 9.2cm

b) 5.4cm

c) 7.2cm

4) a) 11.1cm

b) 53°

### Advanced

1), 2) & 3) Discussion: Each set of relationships is parallel.

4) 90°, 90°, 25°, 25°, 65°, 65°; length 18.8cm

5) a)  $\frac{\sqrt{3}}{2}$

b)  $\frac{1}{2}$

c)  $\sqrt{3}$

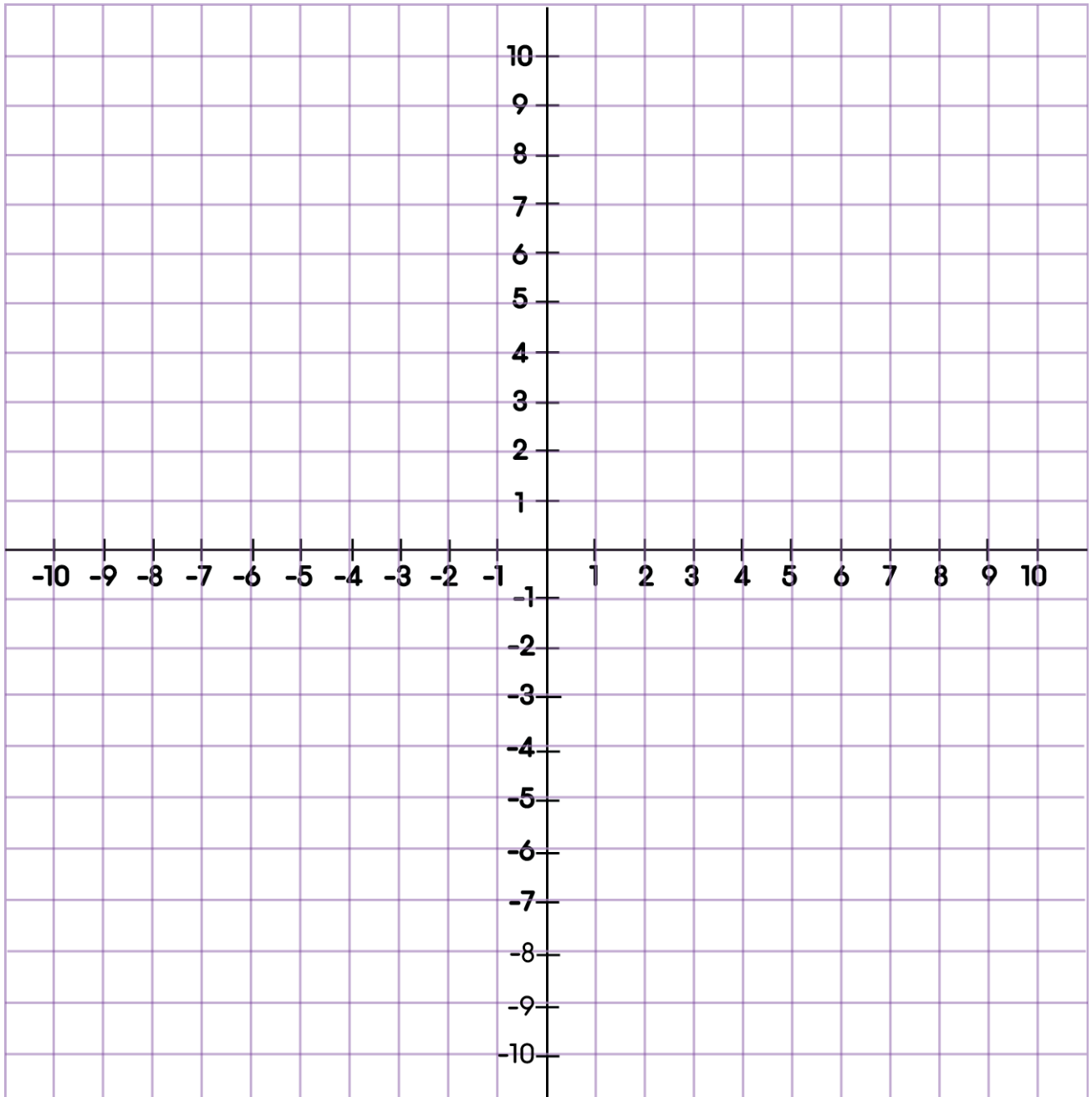
d)  $\frac{1}{2}$

e)  $\frac{\sqrt{3}}{2}$

f)  $\frac{1}{\sqrt{3}}$



# Hyperbolic Geometry





# Hyperbolic Geometry

