





LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 6 Day 1
	Topic : Trigonometry Lesson number 1 : Cosine
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Solving trigonometry by using cosine formular to find the adjacent.



Introduction

- To calculate cosine we will use the formula
$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}} .$$
- Remember that the hypotenuse is always opposite your right angle.
- In this exercise first you have to list down the known values which are the angle and hypotenuse
- Then the unknown which is the adjacent.
- Then solve to find the length of adjacent
- Do exercise 5.6



Catch phrase for the lesson :
SOH CAH TOA



Learners notes

COSINE

Remember $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$

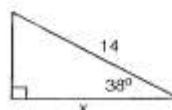


The methods we will use to solve triangles using cosine are the same as we used for sine.

Finding the Adjacent

Examples Find the adjacent side giving answers to 2 decimal places.

(a)



$$\begin{aligned}\text{angle} &= 38^\circ \\ \text{hypotenuse} &= 14 \\ \text{adjacent} &= x \\ \cos \theta &= \frac{\text{adjacent}}{\text{hypotenuse}}\end{aligned}$$

$$\cos 38 = \frac{x}{14}$$

$$0.7880 = \frac{x}{14}$$

$$0.7880 \times 14 = \frac{x}{14} \times 14$$

$$11.03 = x$$

(b)



$$\begin{aligned}\text{angle} &= 17^\circ \\ \text{hypotenuse} &= 23.6 \\ \text{adjacent} &= x \\ \cos \theta &= \frac{\text{adjacent}}{\text{hypotenuse}}\end{aligned}$$

$$\cos 17 = \frac{x}{23.6}$$

$$0.9563 = \frac{x}{23.6}$$

$$0.9563 \times 23.6 = x$$

$$22.57 = x$$



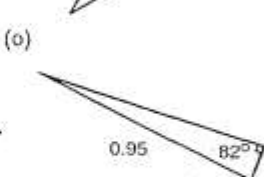
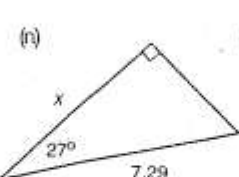
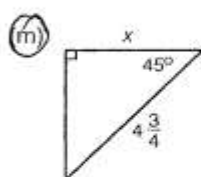
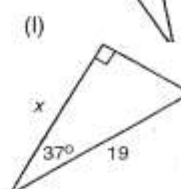
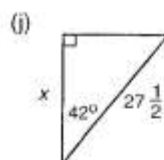
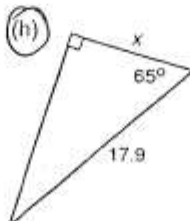
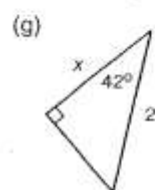
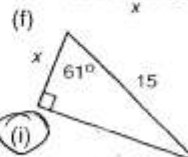
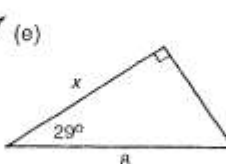
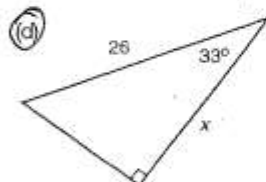
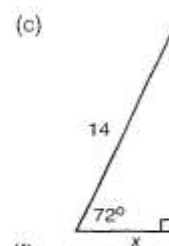
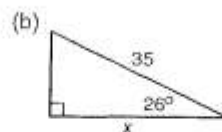
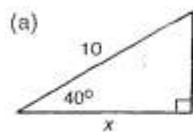
Visual aids



Exercises

Exercise 5.6

1. Find the values of x in the following triangles. Give your answers to 2 decimal places.



- * 2. In triangle MNP, $\angle P = 90^\circ$, $\angle M = 86^\circ$ and $NM = 14$ cm.
 (a) Find length PM
 (b) Use Pythagoras's Theorem to find length NP.

Do question 1 : d, h, i, k, m and question 2 a and b



Assignment







Assessment

- Short quiz



References

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 6 Day 2
	Topic : Trigonometry Lesson number 2 : Cosine
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Slove trigonometry by using cosine to find the hypotenuse.



Introduction

- To find the hypotenuse using the cosine
- Remember : CAH
- $C = \cos$
- A = ADJACENT
- H = HYPOTENUSE
- θ = ANGLE
- Find the known values first then solve the unknown value.
- Do exercise 5.7



Catch phrase for the lesson :
SOH CAH TOA



Learners notes

Finding the Hypotenuse

Examples

Find the value of the hypotenuse

(a)



angle = 68°
hypotenuse = x
adjacent = 4

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\cos 68 = \frac{4}{x}$$

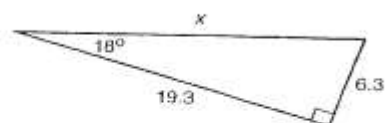
$$0.3746 = \frac{4}{x}$$

$$0.3746 \times x = 4$$

$$x = \frac{4}{0.3746}$$

$$= 10.68$$

(b)



angle = 18°
hypotenuse = x
adjacent = 19.3

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\cos 18 = \frac{19.3}{x}$$

$$0.9511 = \frac{19.3}{x}$$

$$0.9511 \times x = 19.3$$

$$x = \frac{19.3}{0.9511}$$

$$= 20.29$$



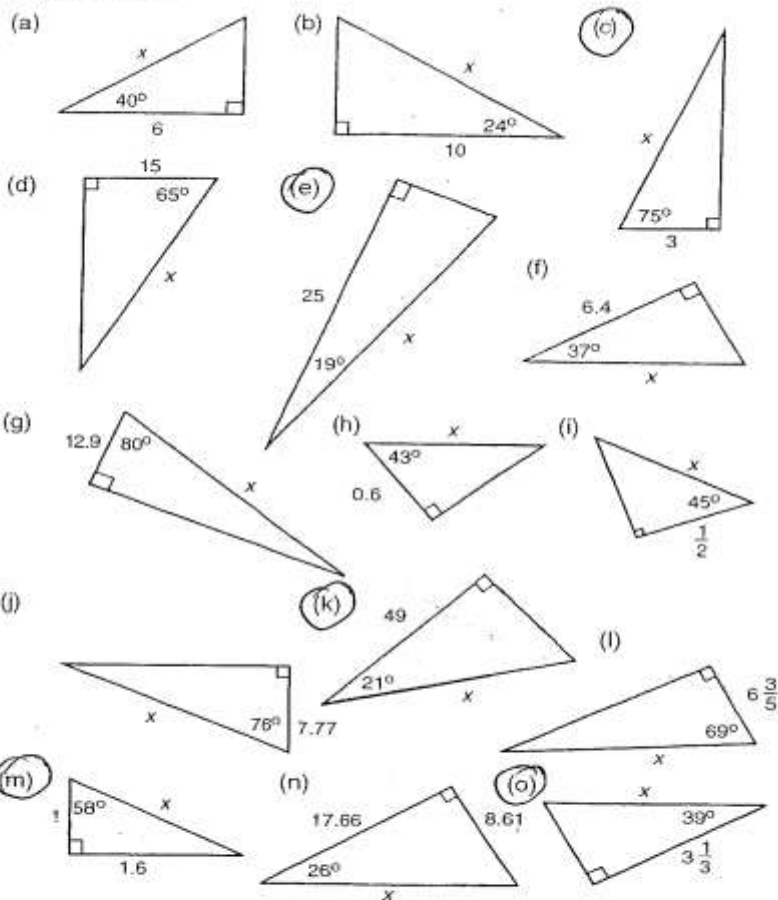
Visual aids



Exercises

Exercise 5.7

1. Find the values of x in the following triangles. Give your answer to 2 decimal places.



- * 2. In triangle ABC, $\angle A = 90^\circ$, $\angle B = 33^\circ$ and length $AB = 452$ cm.
 (a) Find length CB
 (b) Use Pythagoras's Theorem to find length CA.

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Do question 1 : c, e, k, o, m, and question 2 a and b



Assignment



Assessment





- Short quiz

Year 9 Maths Book 2



References

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 6 Day 3
	Topic : Trigonometry Lesson number 3 : Cosine
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Solve trigonometry by using cosine formular to find the Angle.



Introduction

- To find the angle both the adjacent and the hypotenuse is given.
- So on your calculator press : shift, cos $\left(\frac{\text{adjacent}}{\text{hypotenuse}}\right)$
- Do exercise 5.8



Catch phrase for the lesson :
SOH CAH TOA



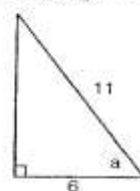
Learners notes

Finding the Angle

Examples

Find the angle in the following triangles:

(a)



angle = a
hypotenuse = 11
adjacent = 6

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\cos a = \frac{6}{11}$$

$$= 0.5455$$

$$a = 56.94^\circ \text{ (or } 57^\circ)$$

Calculator input: $\boxed{\text{Shift}} \boxed{\cos} \frac{6}{11}$

(b)



angle = θ
hypotenuse = 17.73
adjacent = 6.2

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\cos \theta = \frac{6.2}{17.73}$$

$$= 0.3497$$

$$\theta = 69.53^\circ \text{ (or } 70^\circ)$$



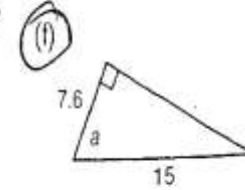
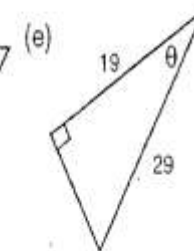
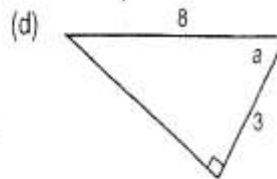
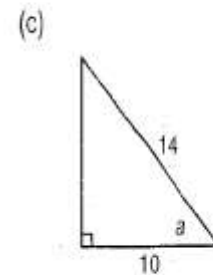
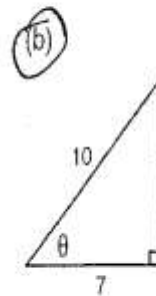
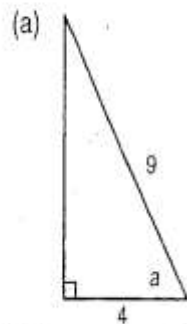
Visual aids



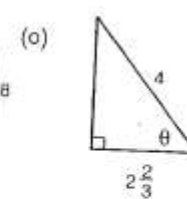
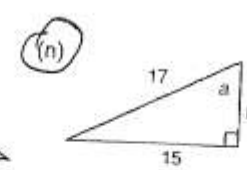
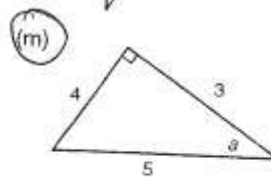
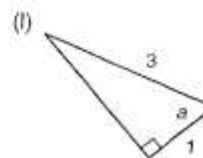
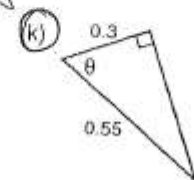
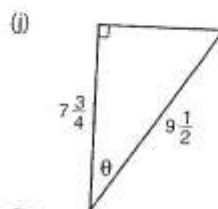
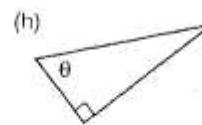
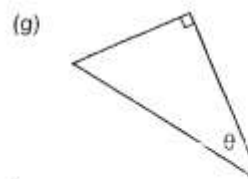
Exercises

Exercise 5.8

1. Find the angle in the following triangles:



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- * 2. In triangle LMN, $\angle L = 90^\circ$, length LM = 16 and length LN = 12.
- Use Pythagoras's Theorem to find length MN
 - Find $\angle N$
 - Find $\angle M$.

Do question 1 : b, f, k, m, n and question 2 a, b and c



Assignment



Assessment





- Short quiz



References

Year 9 Maths Book 2

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 7 Day 1
	Topic : Trigonometry Lesson number 1 : Tangent
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Solve trigonometry by using tangent formular to find the opposite.



Introduction

- To find tangent use the formula
- $\tan \theta = \frac{\text{Opposite}}{\text{Adjacent}}$
- TOA
- T = TAN
- O = OPPOSITE
- A = ADJACENT
- $\theta = \text{ANGLE}$
- To calculate the value of opposite rearrange the formula above so that it will be :
(Adjacent x $\tan \theta$ = opposite).
- Do exercise 5.9



Catch phrase for the lesson :
SOH CAH TOA



Learners notes

TANGENT

Remember: $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$



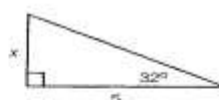
Tangent questions are easy to recognise since the triangle will not have any value written on the hypotenuse.

Finding the Opposite

Examples

Find the value of the opposite side to 2 decimal places.

(a)



angle = 32°

opposite = x

adjacent = 5

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

$$\tan 32 = \frac{x}{5}$$

$$0.6249 = \frac{x}{5}$$

$$0.6249 \times 5 = x$$

$$3.12 = x$$

(b)



angle = 19°

opposite = x

adjacent = 17.6

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

$$\tan 19 = \frac{x}{17.6}$$

$$0.3443 = \frac{x}{17.6}$$

$$0.3443 \times 17.6 = x$$

$$6.06 = x$$



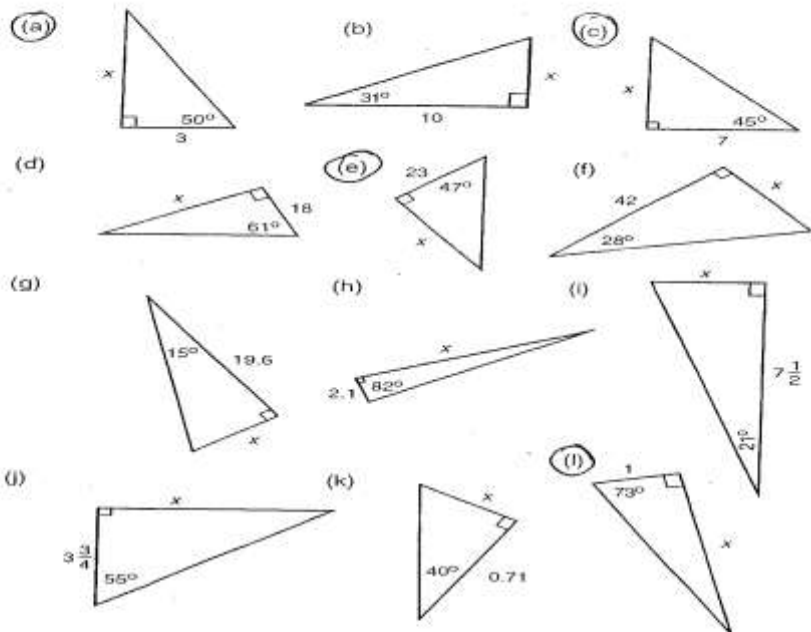
Visual aids



Exercises

Exercise 5.9

1. Find the value of x , to 2 decimal places.



2. In triangle XYZ, $\angle Y = 90^\circ$, $\angle X = 63^\circ$ and length XY = 11.21 cm.

- Draw a diagram
- Find length ZY
- Use Pythagoras's Theorem to find XZ
- Find $\angle Z$.

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Do question 1 : a, c, e, k, l and question 2 a, b, c and d.



Assignment



Assessment





- Short quiz

Year 9 Maths Book 2



References

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 7 Day 2
	Topic : Trigonometry Lesson number 2 : Tangent
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Solve trigonometry using tangent formular to find the adjacent.



Introduction

- To find the length of the adjacent :
(adjacent = opposite / $\tan\theta$)
- Do exercise 5.10



Catch phrase for the lesson :
SOH CAH TOA



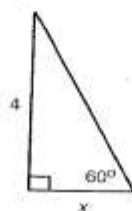
Learners notes

Finding the Adjacent

Examples

Find the length of the adjacent, giving answers to 2 decimal places.

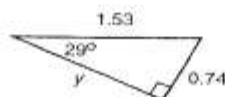
(a)



$$\begin{aligned}\text{angle} &= 60^\circ \\ \text{opposite} &= 4 \\ \text{adjacent} &= x \\ \tan \theta &= \frac{\text{opposite}}{\text{adjacent}}\end{aligned}$$

$$\begin{aligned}\tan 60 &= \frac{4}{x} \\ 1.7321 &= \frac{4}{x} \\ 1.7321 \times x &= 4 \\ x &= \frac{4}{1.7321} \\ &= 2.31\end{aligned}$$

(b)



$$\begin{aligned}\text{angle} &= 29^\circ \\ \text{opposite} &= 0.74 \\ \text{adjacent} &= y\end{aligned}$$

$$\begin{aligned}\tan \theta &= \frac{\text{opposite}}{\text{adjacent}} \\ \tan 29 &= \frac{0.74}{y} \\ 0.5543 &= \frac{0.74}{y} \\ 0.5543 \times y &= 0.74 \\ y &= \frac{0.74}{0.5543} \\ &= 1.34\end{aligned}$$



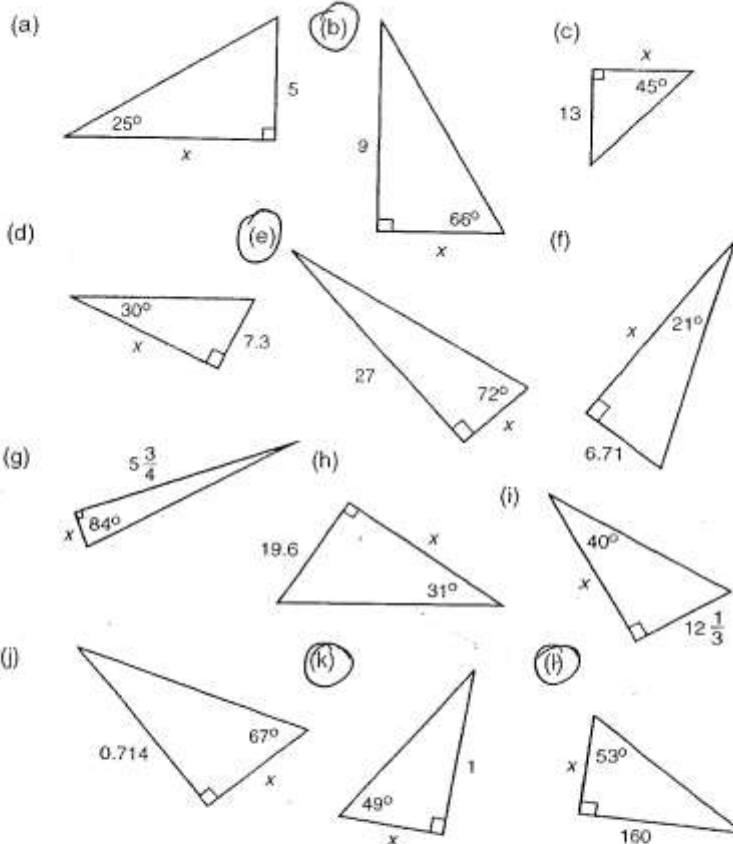
Visual aids



Exercises

Exercises 5.10

1. Find the value of x to 2 decimal places.



* 2. In the triangle HKL, $\angle HKL = 90^\circ$, $\angle KHL = 23^\circ$ and length $KL = 47$ cm.

- Draw a diagram
- Find length HK
- Find length HL
- Find $\angle HLK$.

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Do question 1 : b, e, k, l, and question 2 a, b, c and d



Assignment







Assessment

- Short quiz



References

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 7 Day 3
	Topic : Trigonometry Lesson number 3 : Tangent
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Solve trigonometry by using tangent formular to find the angle.



Introduction

- To find the angle :
press shift, Tan = $\left(\frac{\text{opposite}}{\text{adjacent}}\right)$
- Do the exercise 5.11



Catch phrase for the lesson :
SOH CAH TOA



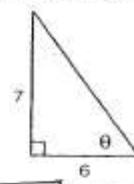
Learners notes

Finding the Angle

Examples:

Find the value of the angle.

(a)



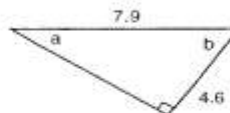
angle = θ
opposite = 7
adjacent = 6

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

$$\boxed{\text{Shift}} \boxed{\text{tan}} \frac{7}{6}$$

$$\begin{aligned} \tan \theta &= \frac{7}{6} \\ &= 1.1667 \\ \theta &= 49.4^\circ \text{ (or } 49^\circ) \end{aligned}$$

(b)



angle = a
opposite = 4.6
adjacent = 7.9

Finding a $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$

$$\begin{aligned} \tan a &= \frac{4.6}{7.9} \\ &= 0.5823 \\ a &= 30.21^\circ \text{ (or } 30^\circ) \end{aligned}$$

Finding b

Remember the angles inside a triangle add up to 180° .



$$\begin{aligned} b &= 180 - 30.21 - 90^\circ \\ &= 59.79 \text{ (or } 60^\circ) \end{aligned}$$



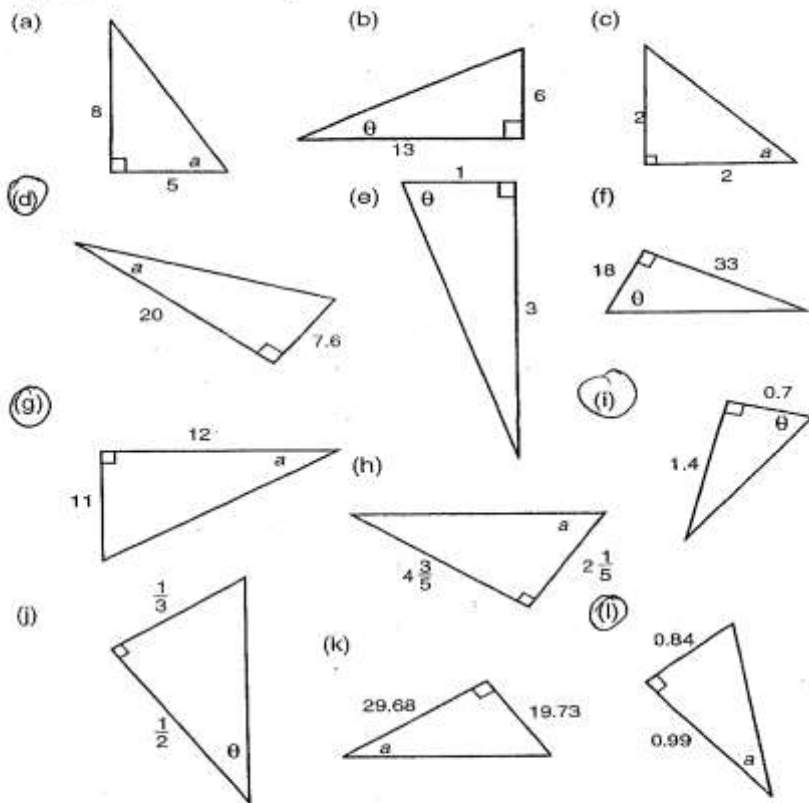
Visual aids



Exercises

Exercise 5.11

1. Find the value of the angle.



2. In triangle VWY, $\angle V = 90^\circ$, VW = 72 cm and VY = 104 cm.

- Find $\angle W$
- Find $\angle Y$
- Find length WY.

Do question 1 : d, g, h, i, l and question 2 : a, b, and c



Assignment







Assessment



References

- Short quiz

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 8 Day 1
	Topic : Trigonometry Lesson number 1 : SOH CAH TOA
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Calculate the value of hypotenuse, adjacent opposite and angle by using the formula of sine, cosine and tangent.



Introduction

- We have learn how to calculate the sides and angles of a right angle using sine, cosine and the tangent individually.
- But for this exercise first list down the known values.
- Find out which rule is suitable for you to use. The sine, cosine or tangent. (SOH CAH TOA) in order to find the sides and the angle of your right angle triangle.
- Do exercise 5.12



Catch phrase for the lesson :
SOH CAH TOA



Learners notes

Using Sine, Cosine and Tangent

To find a side or angle in a right-angled triangle you need to first decide whether to use the formula for sine, cosine or tangent.

Example 1

Find the value of the pronumeral in the following:

(a)



Here we have ...

angle = 49°

hypotenuse = 16

adjacent = x

So we need to use **cosine**.

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\cos 49 = \frac{x}{16}$$

$$0.6561 = \frac{x}{16}$$

$$0.6561 \times 16 = x$$

$$10.5 = x$$

(b)



Here we have ...

angle = 31°

hypotenuse = x

opposite = 7.3

So we need to use **sine**.

$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\sin 31 = \frac{7.3}{x}$$

$$0.5150 \times x = \frac{7.3}{x}$$

$$x = \frac{7.3}{0.5150}$$

$$= 14.17$$

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(c)



Here we have ...

angle = θ

opposite = 14

adjacent = 9

So we need to use **tangent**.

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

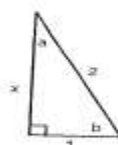
$$\tan \theta = \frac{14}{9}$$

$$= 1.5556$$

$$\theta = 57.27^\circ \text{ (or } 57^\circ)$$

Example 2

Find all pronumerals.



To find a ...

angle = a

opposite = 1

hypotenuse = 2

therefore **sine**

$$\sin a = \frac{1}{2}$$

$$= 0.5$$

$$a = 30^\circ$$

$$b = 180^\circ - 90^\circ - 30^\circ$$

$$= 60^\circ$$

To find x you could use cosine, tangent or Pythagoras's Theorem.

Using cosine ...

angle = 30°

adjacent = x

hypotenuse = 2

$$\cos 30 = \frac{x}{2}$$

$$0.8660 = \frac{x}{2}$$

$$0.8660 \times 2 = x$$

$$1.732 = x$$



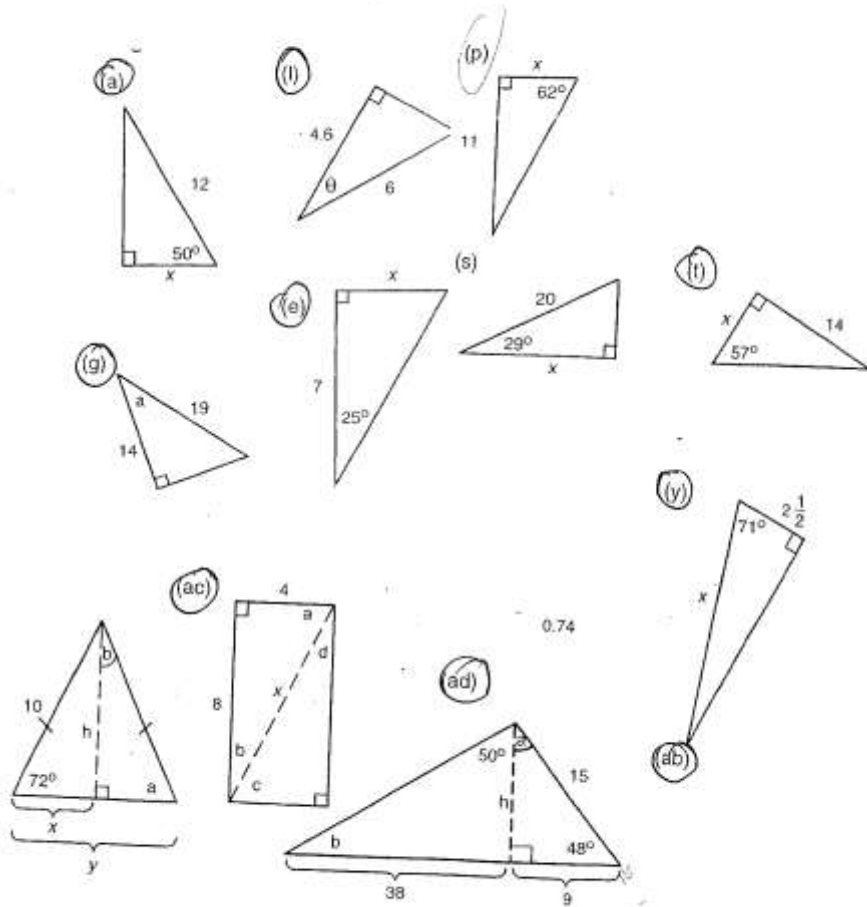
Visual aids



Exercises

Exercise 5.12

- For the following triangles, first decide whether to use **sine**, **cosine** or **tangent** and then find the value of the pronumeral.



Do question 1 : Do all of them.



Assignment







Assessment



References

- Short quiz

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 8 Day 2
	Topic : Trigonometry Lesson number 2 : Application problem
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Solve problems using trigonometry.



Introduction

To be able to do this exercise :

- Read the question carefully.
- List the known values.
- The diagram is already drawn for you.
- Decide which rule you will use sine, cosine or tangent.
- Find out whether you are to calculate the sides or angle of your right angle triangle.



Catch phrase for the lesson :
SOH CAH TOA



Learners notes

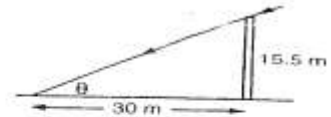


Visual aids



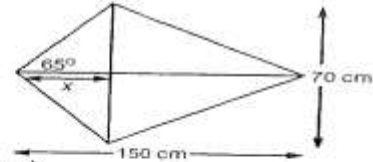
Exercises

3. A vertical pole 15.5 m high casts a shadow 30 m long on the horizontal ground. What is the angle of elevation of the sun? (Give answer correct to the nearest degree.)



4. A ladder 3750 mm long leans against a vertical wall touching it at a height of 2900 mm.
(a) What angle does the ladder make with the wall?
(b) How far from the bottom of the wall is the foot of the ladder? (Give angles correct to the nearest degree and distance correct to the nearest millimetre.)

5. A kite is 150 cm long and 70 cm wide. The smaller edge makes an angle of 65° as shown. What is the length of x ?

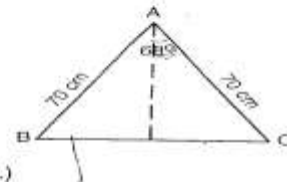


(Give answer correct to the nearest cm.)

6. An isosceles triangle has equal sides of 70 mm and the angle between these sides is 68° . Find the length of the base.



Hint: Bisect the top angle and work in one of the right-angled triangles so formed.



(Give answer correct to the nearest mm.)

7. A parallelogram has vertical height 7.3 cm and slant height 9.2 cm. Find the sizes of the angles in the parallelogram.



(Give answers correct to the nearest degree.)

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Do all of the questions.



Assignment



Assessment





- Short quiz



References

Year 9 Maths Book 2

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 8 Day 3
	Topic : Algebra Lesson number 1 : Powers / Indices
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Recognise factor form and index form.



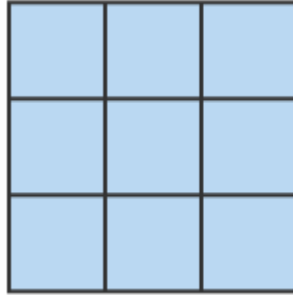
Introduction

Power and roots

Squares, cubes and higher powers are shown as small digits called indices. The opposite of squaring and cubing are called square root and cube root. There are more rules we can use with indices.

Powers

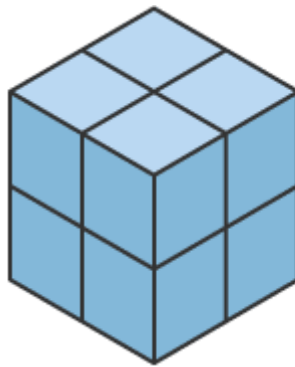
9 is a square number.



$$3 \times 3 = 9$$

3×3 can also be written as 3^2 . This is pronounced "3 squared".

8 is a cube number.



$$2 \times 2 \times 2 = 8$$


$2 \times 2 \times 2$ can also be written as 2^3 , which is pronounced "2 cubed".

Index form

The notation 3^2 and 2^3 is known as **index form**. The small digit is called the index number or **power**.

You have already seen that $3^2 = 3 \times 3 = 9$ and that $2^3 = 2 \times 2 \times 2 = 8$.

Similarly, 5^4 (five to the power of 4) $= 5 \times 5 \times 5 \times 5 = 625$

	<p>and 3^5 (three to the power of 5) = $3 \times 3 \times 3 \times 3 \times 3 = 243$.</p> <p>The index number tells you how many times the number should be multiplied.</p> <ul style="list-style-type: none"> • When the index number is two, the number has been squared. • When the index number is three, the number has been cubed. • When the index number is greater than three you say that it has been multiplied to the power of. <p>For example:</p> <p>7^2 is 'seven squared'.</p> <p>3^3 is 'three cubed'.</p> <p>3^7 is 'three to the power of seven'.</p> <p>4^5 is 'four to the power of five'.</p>
	<p>Catch phrase for the lesson :</p>



Learners notes

Topic 4 – Powers Roots and Indices

Index Notation

By repeating a multiplication, we get special numbers that can be written using index notation.

$$\begin{array}{rccccccc} \text{e.g. } 27 & = & 3 \times 3 \times 3 & = & 3^3 \\ & \uparrow & & \uparrow & & \uparrow \\ & \text{basic numeral} & & \text{factor form} & & \text{index form} \end{array}$$

In index form, 2^4 reads "2 to the power of 4"

$$\text{BASE} \rightarrow 2^4 \leftarrow \text{POWER or INDEX}$$

Example 1 Write the following in index form:

a. $5 \times 5 \times 5 \times 5 = 5^4$

b. $-3 \times -3 = (-3)^2$

c. 2 to the power of 7 = 2^7

A special case is where there is just one number

d. $9 = 9^1$

Example 2 Write the following in factor form:

a. $15^3 = 15 \times 15 \times 15$

b. $2a^3b = 2 \times a \times a \times a \times b$

Example 3 Evaluate the following:

a. $4^3 = 4 \times 4 \times 4$
 $= 64$



b. $7^1 + 8^2 = 7 + 8 \times 8$
 $= 7 + 64$
 $= 71$



Visual aids







Exercises

	<p>Exercise 4.1</p> <p>1. Write the following in index form:</p> <p>a. $2 \times 2 \times 2$ b. $3 \times 3 \times 3 \times 3 \times 3 \times 3$ c. $-4 \times -4 \times -4 \times -4$ d. $y \times y \times y \times y \times y \times y$ e. 4 to the power of 3 f. 5 to the power of 10 g. 2.9 to the power of 2 h. 6 to the power of 0.7 i. $a \times a \times a \times b \times b$ j. $m \times n \times n \times n \times n$ k. $p \times p \times p \times p \times q \times q$ l. $f \times g \times g$ m. $6 \times m \times m \times m \times m$ n. $5 \times y \times y$ o. $3 \times 3 \times 3 \times 3 \times k \times k$ p. $17 \times 17 \times e \times e \times e$</p> <p>2. Write the following in factor form:</p> <p>a. 4^8 b. 6^7 c. $(-3)^2$ d. $(-7)^4$ e. 2 to the power of 5 f. 3 to the power of 6 g. m^4 h. y^3 i. a^3b^4 j. m^2n^7 k. $2y^4$ l. $5X^5$ m. $3a^2b^2$ n. $7q^5r$ o. $10ab$ p. $11xy^5$</p> <p>3. Find the missing number:</p> <p>a. $8 = 2$ to the power of ? b. $9 = ?$ to the power of 2 c. $32 = 2$ to the power of ? d. $1000 = ?$ to the power of 3 e. $? = 3$ to the power of 4 f. $16 = 4$ to the power of ? g. $? = 5$ to the power of 3 h. $? = 10$ to the power of 5</p> <p>4. Write down the base of the following:</p> <p>a. 2^5 b. 5^2 c. $(-2)^4$ d. 7 e. $(\frac{1}{2})^3$ f. $6^{1.3}$ g. m^3 h. X^7 i. a^*</p> <p>5. Write down the power of the following:</p> <p>a. 3^4 b. 2^{12} c. $(-5)^6$ d. 13 e. $(\frac{2}{3})^4$ f. $4^{2.1}$ g. X^5 h. m^5 i. p^*</p> <p>Question 1 : Do e, i, m, o, p and n Question 2 : Do a, c, e, i, m and p Question 3 : Do a, b, d, f and h Question 4 : Do f, g, b, c, i, e and h Question 5 : Do b, g, c, d and i</p>
 <p>Assignment</p>	
 <p>Assessment</p>	<ul style="list-style-type: none"> • Short quiz
	<p>https://www.bbc.co.uk/bitesize/guides/z66p34j/revision/1 Year 9 Maths Book 2</p>



References

LESSON Plan

 Teacher	Name : Lorien and Lishi Subject : Mathematics
 Date	Week 9 Day 1
	Topic : Algebra Lesson number 1 : squares and square roots
 Learning out Comes	<ul style="list-style-type: none">• Students should be able to• Calculate the square and square root of given numbers.• Calculate the cubes and cube root of given numbers.



Introduction

squares

"Squared" is often written as a little 2 like this:

$$4^2$$

"4 Squared equals 16"

(the little 2 says the number appears twice in multiplying)

$$4 \times 4 = 4^2$$

Square root

Finding the square root of a number is the [inverse operation](#) of squaring that number. Remember, the square of a number is that number times itself.

$$\text{square of } n = n^2$$

$$\text{square of } 5 = 5 \times 5 = 5^2 = 25$$

The perfect squares are the squares of the whole numbers.

Perfect squares:

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

The square root of a number, n , written below is the number that gives n when multiplied by itself.






$$\sqrt{n}$$

The square root of a number, n , written below is the number that gives n when multiplied by itself.

$$\sqrt{n}$$

$$\sqrt{100} = 10$$

because $10 \times 10 = 100$

	<p>Catch phrase for the lesson :</p>
<p>Learners notes</p> 	<p>Squares and Square Roots</p> <p>Any number to the power 2 is said to be "squared".</p> <p>e.g. $7^2 = 7 \text{ squared}$ $= 7 \times 7$ $= 49$</p> <p>Finding the square root of a number is the opposite of finding the square. We use the symbol $\sqrt{\quad}$ to mean square root.</p> <p>e.g. $\sqrt{49} = \text{square root of } 49$ $= 7$</p> <p>Cubes and Cube Roots</p> <p>Any number to the power of 3 is said to be "cubed".</p> <p>e.g. $2^3 = 2 \text{ cubed}$ $= 2 \times 2 \times 2$ $= 8$</p> <p>Finding the cube root of a number is the opposite of finding the cube. We use the symbol $\sqrt[3]{\quad}$ to mean the cube root.</p> <p>e.g. $\sqrt[3]{8} = \text{cube root of } 8$ $= 2$</p> <div data-bbox="810 1249 1145 1395"> <p>A calculator can help you find squares, cubes, square roots and cube roots.</p>  </div>
 <p>Visual aids</p>	
 <p>Exercises</p>	

Exercise 4.2

1. Evaluate the following squares and cubes:

- | | | |
|-----------|-----------|-----------|
| a. 9^2 | b. 6^2 | c. 10^2 |
| d. 0^2 | e. 1^2 | f. 5^2 |
| g. 13^2 | h. 30^2 | i. 3^3 |
| j. 2^3 | k. 10^3 | l. 4^3 |
| m. 5^3 | n. 0^3 | o. 1^3 |

2. Find the following square roots and cube roots:

- | | | |
|-------------------|--------------------|---------------------|
| a. $\sqrt{36}$ | b. $\sqrt{4}$ | c. $\sqrt{1}$ |
| d. $\sqrt{144}$ | e. $\sqrt{121}$ | f. $\sqrt{0}$ |
| g. $\sqrt{25}$ | h. $\sqrt{81}$ | i. $\sqrt{125}$ |
| j. $\sqrt[3]{27}$ | k. $\sqrt[3]{64}$ | l. $\sqrt[3]{1}$ |
| m. $\sqrt[3]{0}$ | n. $\sqrt[3]{216}$ | o. $\sqrt[3]{1000}$ |

3. Find the answers to the following:

- | | | |
|-----------------------|------------------------------|----------------------------------|
| a. $6^2 + 10^2$ | b. $11^2 - 1^2$ | c. $3^2 \times 2^2$ |
| d. $8^2 + 4^2$ | e. $3^4 - 3^2$ | f. $2^3 + 1^3$ |
| g. $6^3 \div 3^2$ | h. $\sqrt{64} = 2^3$ | i. $\sqrt{49} + \sqrt{25}$ |
| j. $\sqrt{100} + 1^3$ | k. $\sqrt{36} \div \sqrt{4}$ | l. $\sqrt{16} \times \sqrt{121}$ |

4. a. Find the product of 13 and itself.
b. What number equals 144 when squared?

5. Fill in the missing numbers:

- | | | |
|-------|---|----------------------|
| a. ? | = | 5 cubed |
| b. 16 | = | ? squared |
| c. 9 | = | the square root of ? |
| d. 3 | = | the cube root of ? |

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Question 1 : Do d, k, e, i, m, o, p and n

Question 2 : Do a, c, e, i, m and o

Question 3 : Do a, b, d, f, h, k and l

Question 4 : Do both of them

Question 5 : Do all of them



Assignment



Assessment

- Short quiz



References

<http://www.math.com/school/subject1/lessons/S1U1L9GL.html>

Year 9 Mathematics Book 2

