Teaching plan, Pythagoras

Lesson	Content + organization	Aims
1	The pupils must cut out in paper a proof of Pythagoras' theorem. The pupils must cut out: - 8 right-angled triangles with the area ½ ab - 2 squares with the area $(a+b)^2$ - 1 square with the area a^2 - 1 square with the area b^2 - 1 square with the area c^2 By using the triangles and squares, the pupils should realize that $a^2+b^2=c^2$. First they are allowed to busy themselves with the proof. Then we hear what the pupils have come up with. We end up with going through the proof on the blackboard.	The pupils must obtain knowledge of the proof of Pythagoras' theorem.
2	Taking some right-angled triangles as their starting point, the pupils must write the lengths of the sides a, b and c into a template and calculate a^2, b^2, c^2 and a^2+b^2. The pupils work alone or in pairs. The pupils go to the blackboard and write their results.	Through the work with right-angled triangles the pupils should experience that $a^2+b^2=c^2$.
3	With the help of Pythagoras' theorem the pupils must solve various problems and answer questions handed out to them on sheets of paper. The tasks necessitate that the pupils can use Pythagoras' theorem. They must be able to find out whether they should find a/b or c. The pupils work alone or in pairs. Continuously the pupils go to the blackboard where they must explain and show how they have solved the task.	The pupils must be able to use Pythagoras' theorem. .

Lesson 1 - Pythagoras theorem $a^2 + b^2 = c^2$

1. In a right-angled triangle with hypotenuse c and legs a and b:

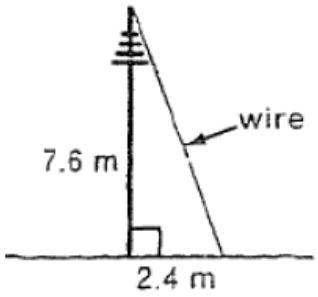
1. Find c if a=5 and b=12
2. Find a if b=8 and c=12
3. Find b if a=9 and c=11
4. Find a if b=11 and c=14
5. Find b if a=7 and c=10

Correct the result to two decimals.

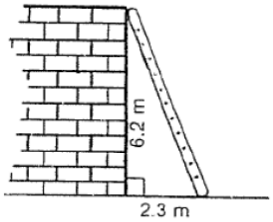
2. Two villages, Granola and Grits, are separated by Lake Sun Shine. The road from Grits to Granola heads 2 km straight south and then 5 km due east. If a bird flies from Grits to Granola in a straight line, how far does it fly?

3. You're locked out of your house and the only open window is on the second floor, 4 meters above the ground. You need to borrow a ladder from one of your neighbours and the ladder is 5 meters long. There's a bush 2 meter wide bush along the house.
Is it possible to place the ladder in front of the window without touching the bush?

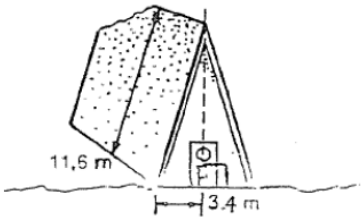
4. A wire supports a pole of height 7.6 m. The distance from the foot of the pole to the point where the wire is fastened to a stake in the ground is 2.4 m. How long is the wire?



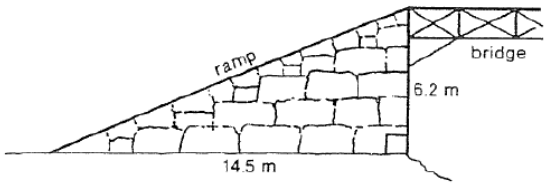
5. How long must a ladder be to reach the top of a 6.2 m wall if the foot of the ladder must be 2.3 m from the wall?



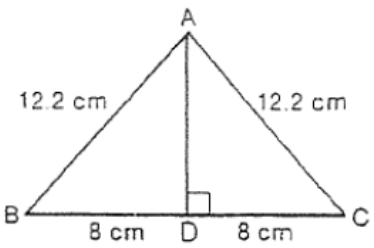
6. The roof of an A-frame house is 11.6 m long. The distance from the edge of the roof to the middle of the door is 3.4 m. How high is the house?



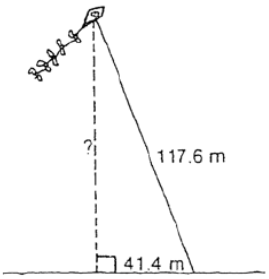
7. Find the length of the ramp in the diagram below.



8. Use the diagram to find the length of AD.

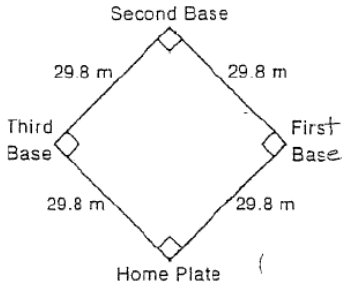


9. Find the height of the kite.

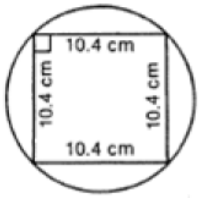


10. Use the measures of the baseball field to find:

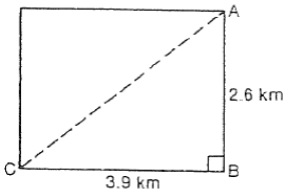
a) the length of the throw from home plate to second base.
b) the length of the throw from exactly halfway between second base and third base to first base.



11. Find the radius of this circle.



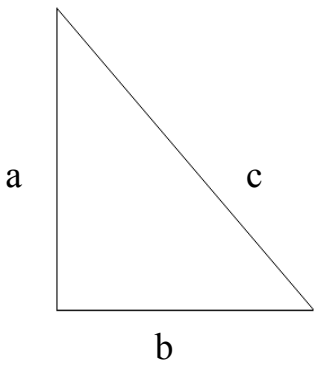
12. Calculate how much shorter path AC is than walking along path AB and then along path BC.



Lesson 2 - Measure the sides a, b and c in the triangles and fill out the form

	a (mm)	b (mm)	c (mm)	a^2 (mm^2)	b^2 (mm^2)	c^2 (mm^2)	a^2+b^2 (mm^2)
1)							
2)							
3)							
4)							
5)							
6)							

1)



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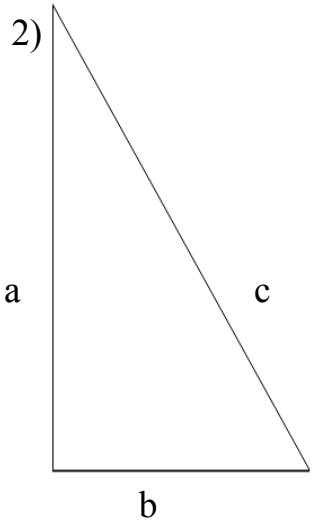

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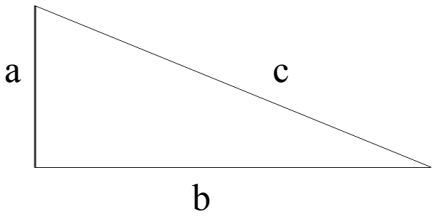

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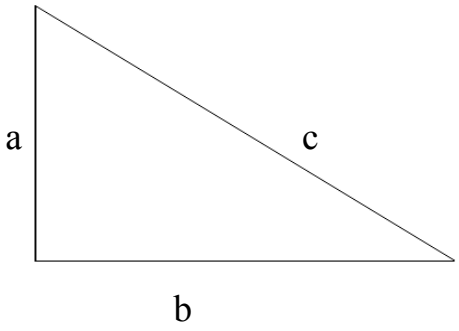

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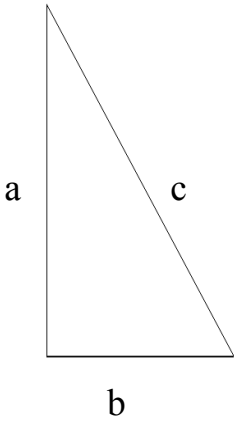
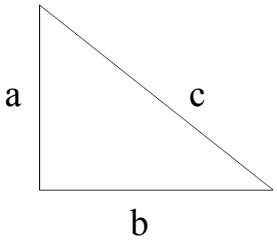
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