High School
Mathematics Test 2013

Year 9

Pythagoras Theorem

Non Calculator

Skills and Knowledge Assessed:

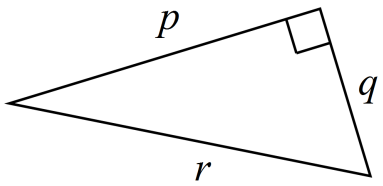
- Investigate Pythagoras' Theorem and its application to solving simple problems involving right angled triangles (ACMMG222)

Name_____

Section 1 Short Answer Section

Write all working and answers in the spaces provided on this test paper.

1. State Pythagoras Theorem for the triangle shown.



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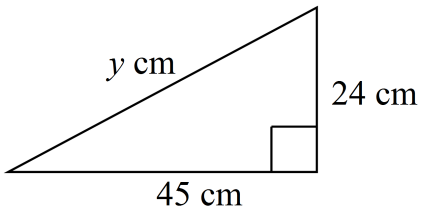
2. Find the value of y in the triangle.



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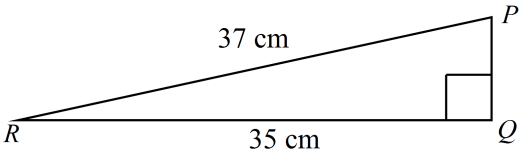
3. What is the length of PQ?



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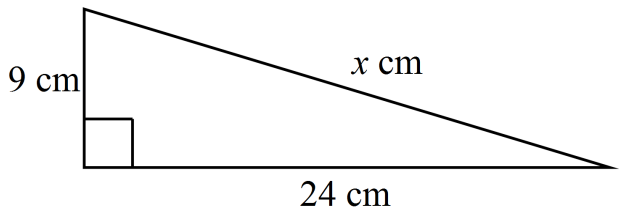
4. Give the exact value of x.



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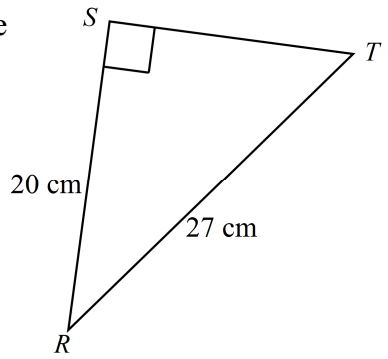
5. Find the length of *ST*, correct to the nearest 10^{th} of a centimetre



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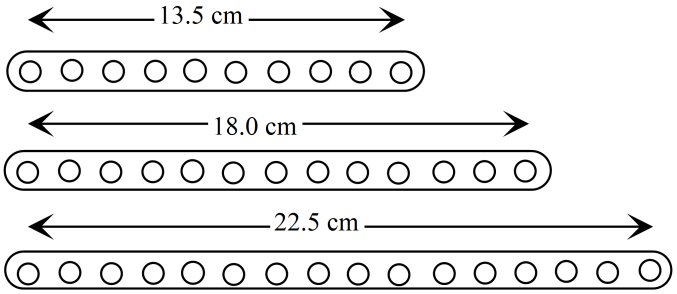
6. Marcus has three pieces of toy construction equipment whose lengths are given.

When connected through the last holes at each end to from a triangle, will the three pieces form a right triangle?



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7. Determine if a triangle with sides 39 cm, 80 cm and 89 cm, is right angled or not. (Show calculations to explain your answer.)

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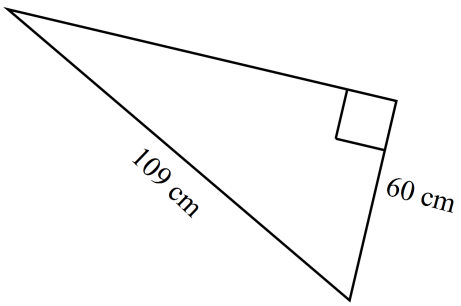
8. What is the perimeter of the triangle shown?



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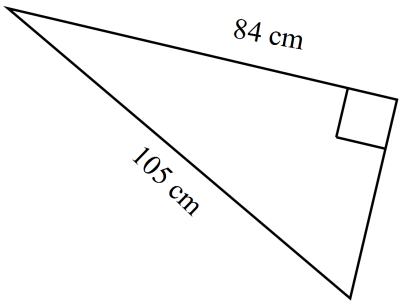
9. What is the area of the triangle?



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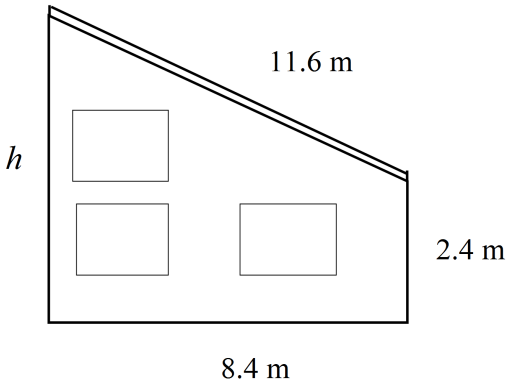
10. What is the height of the wall, marked *h*?



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High School
Mathematics Test 2013
Pythagoras Theorem

Year 9

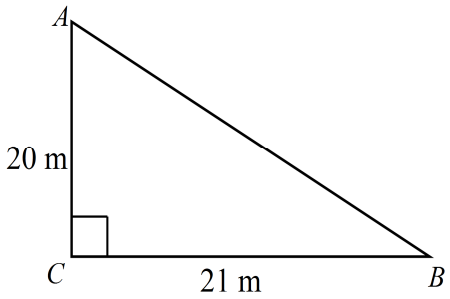
Calculator Allowed

Name_____

Section 2 Multiple Choice Section

Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section.

1. Find the length of AB in the triangle below.



A. 29 m
B. 31 m
C. 36 m
D. 41 m

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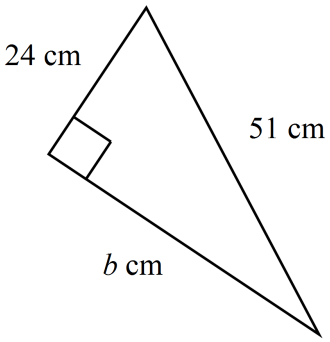
2. What is the value of b, in this diagram?



A. 33
B. 45
C. 56
D. 75

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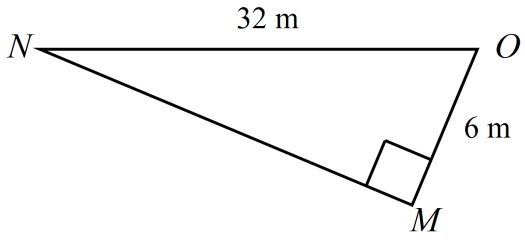
3. Which expression describes the length of MN?



A. $\sqrt{26}$ B. $\sqrt{38}$
C. $\sqrt{988}$ D. $\sqrt{1060}$

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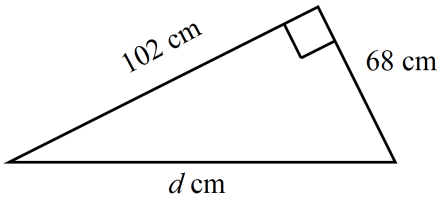
4. What is the value of d, correct to two decimal places?

A. 13.04 cm

B. 34.00 cm

C. 76.03 cm

D. 122.59 cm



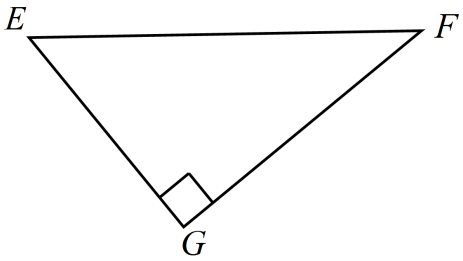
5. Which statement is not correct in relation to ΔEFG?

A. $EF^2 = EG^2 + GF^2$

B. $EG^2 = EF^2 - FG^2$

C. $FE^2 = FG^2 - EG^2$

D. $FG^2 = EF^2 - EG^2$



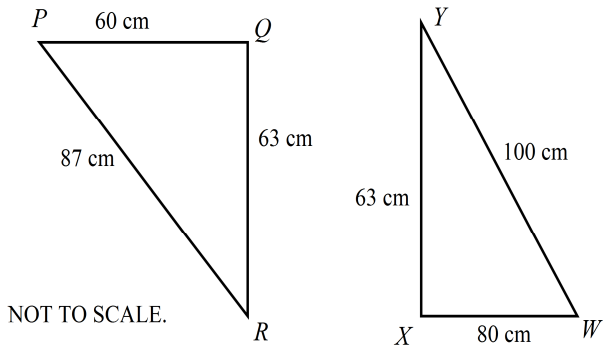
6. Which of these triangles are right angled?

A. Both triangles are right angled.

B. Neither triangle is right angled.

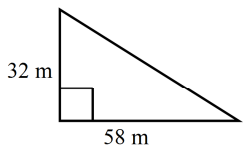
C. Only triangle PQR is right angled.

D. Only triangle WXY is right angled.

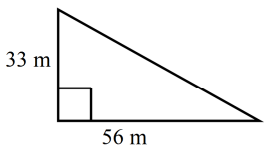


7. Which of the triangles does not have a hypotenuse of 65 m?

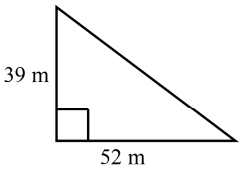
A.



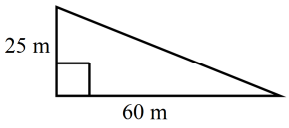
B.



C.



D.



NOT TO SCALE

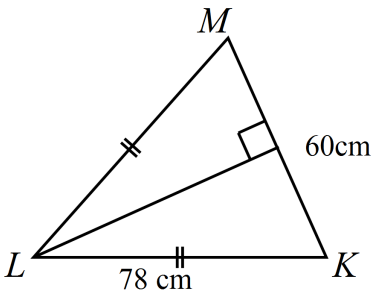
8. ΔKLM is isosceles, with $KL = LM$.
Find the area of ΔKLM.

A. 1 500 cm^2

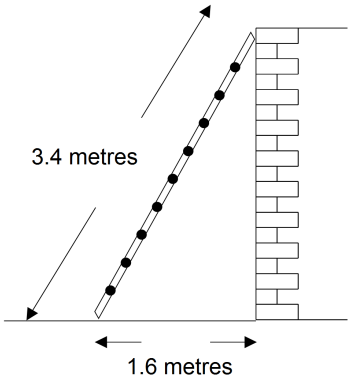
B. 2 160 cm^2

C. 2 340 cm^2

D. 2 808 cm^2

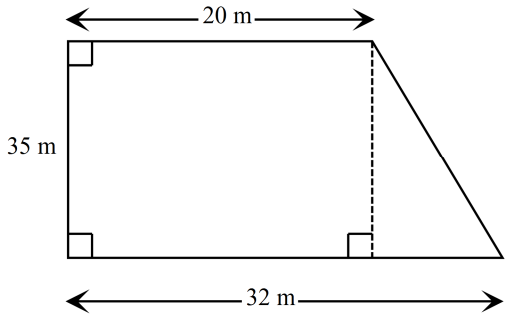


9. The ladder shown, leans against the top of the wall.
What is the height of the wall, correct to the nearest 10^{th} of a metre?



A. 1.8 metres
B. 2.4 metres
C. 2.6 metres
D. 3.0 metres

10. What is the perimeter of this shape?



A. 87 m
B. 110 m
C. 122 m
D. 124 m

High School
Mathematics Test 2013

Year 9

Pythagoras Theorem

Calculator Allowed

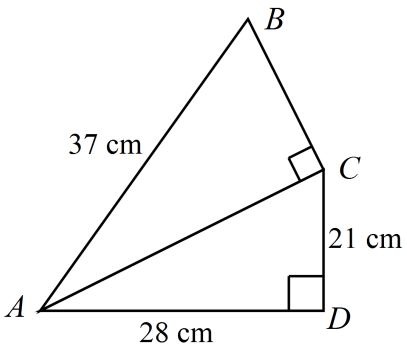
Name_____

Section 3 Longer Answer Section

Write all working and answers in the spaces provided on this test paper.

Marks

1.



a) Find the length of AC. **1**

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b) Find the length of BC. **2**

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High School
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Multiple Choice Answer Sheet

Name _____

Completely fill the response oval representing the most correct answer.

1.	A ⬭	B ⬭	C ⬭	D ⬭
2.	A ⬭	B ⬭	C ⬭	D ⬭
3.	A ⬭	B ⬭	C ⬭	D ⬭
4.	A ⬭	B ⬭	C ⬭	D ⬭
5.	A ⬭	B ⬭	C ⬭	D ⬭
6.	A ⬭	B ⬭	C ⬭	D ⬭
7.	A ⬭	B ⬭	C ⬭	D ⬭
8.	A ⬭	B ⬭	C ⬭	D ⬭
9.	A ⬭	B ⬭	C ⬭	D ⬭
10.	A ⬭	B ⬭	C ⬭	D ⬭

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Mathematics Test 2013
Pythagoras Theorem

ANSWERS

Section 1	
1.	$p^2 + q^2 = r^2$
2.	$y^2 = 24^2 + 45^2$ $= 2601$ $y = 51$ cm
3.	$PQ^2 = 37^2 - 35^2$ $= 1369 - 1225$ $= 144$ $PQ = 12$ cm
4.	$x^2 = 24^2 + 9^2$ $= 657$ $y = \sqrt{657}$ cm
5.	$ST^2 = 27^2 - 20^2$ $= 729 - 400$ $= \sqrt{329}$ $= 18.1$ cm.
6.	$22.5^2 = 506.25$ $13.5^2 + 18^2 = 506.25$ $\therefore$ The triangle will be right angled.
7.	$89^2 = 7921$ $39^2 + 80^2 = 7921$ $\therefore$ The triangle will be right angled.
8.	Let the third side be x $x^2 = 109^2 - 60^2$ $= 11881 - 3600$ $= 8281$ $x = 91$ cm Perimeter $= 109 + 91 + 60$ $= 260$ cm

9.	Let the third side be y $y^2 = 105^2 - 84^2$ $= 11025 - 7056$ $= 3969$ $x = 63$ cm Area $= \frac{1}{2} \times 84 \times 63$ $= 2\,646$ cm^2
10.	Find height of roof above lower wall, say d. $d^2 = 11.6^2 - 2.4^2$ $= 134.56 - 70.56$ $= 64$ $d = 8$ $h = 8 + 2.4$ $h = 10.4$ m

Section 2	
1.	A
2.	B
3.	C
4.	D
5.	C
6.	C
7.	A
8.	B
9.	D
10.	D

Section 3	
1.	a) $AC^2 = 28^2 + 21^2$ $= 784 + 441$ $= 1\,225$ $AC = 35$
	b) $BC^2 = 37^2 - 35^2$ $= 1369 - 1225$ $= 144$ $BC = 12$

High School
Mathematics Test 2013

Multiple Choice Answer Sheet

Name Marking Sheet

Completely fill the response oval representing the most correct answer.

1.	A	●	B	○	C	○	D ○
2.	A	○	B	●	C	○	D ○
3.	A	○	B	○	C	●	D ○
4.	A	○	B	○	C	○	D ●
5.	A	○	B	○	C	●	D ○
6.	A	○	B	○	C	●	D ○
7.	A	●	B	○	C	○	D ○
8.	A	○	B	●	C	○	D ○
9.	A	○	B	○	C	○	D ●
10.	A	○	B	○	C	○	D ●