

WANYANGE GIRLS SECONDARY SCHOOL
S. 3 MATHEMATICS

TIME: 1 hour.

Instructions:

Attempt all questions.

1. Without using tables or calculator evaluate the following:
 - a) $\cos 30^\circ + \sin 60^\circ$
 - b) $\tan 30^\circ + 2\sin 60^\circ$
 - c) $\frac{\cos 30^\circ}{\sin 60^\circ}$
 - d) $\sin 45^\circ \cos 60^\circ + \cos 45^\circ \sin 60^\circ$

2. Find the size of the angles marked by letters in the following:
 - a) If $\sin 70^\circ = \cos x$
 - b) If $\cos 3x = \sin 2x$
 - c) If $\sin 2B = \cos 2B$

3. Express the following ratios in terms of acute angles.
 - a) (i) $\sin 146^\circ$
(ii) $\cos 175^\circ$
(iii) $\tan 167^\circ$

 - b) (i) $\sin 220^\circ$
(ii) $\cos 248^\circ$
(iii) $\tan 218^\circ$

 - c) (i) $\sin 335^\circ$
(ii) $\cos 345^\circ$
(iii) $\tan 290^\circ$

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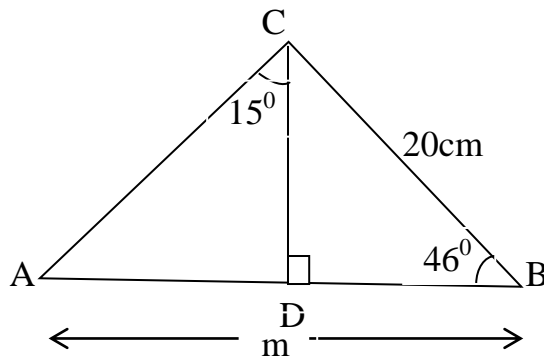
TIME: 1 hour.

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4. In a triangle PQR, $\angle P = 51^\circ$, $\angle R = 90^\circ$ and $\overline{PQ} = 36\text{cm}$. Calculate the lengths of \overline{PR} and \overline{QR} .

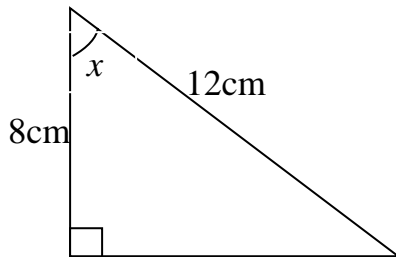
5. In the triangle below, find the length of m.



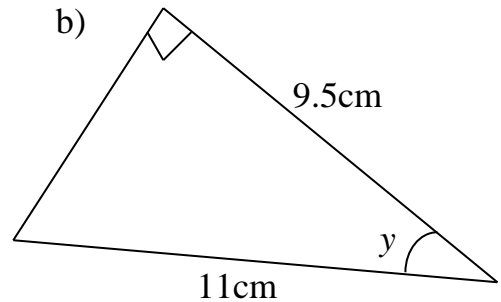
6. PQRS is a rectangle with the diagonal $\overline{PR} = 17\text{cm}$ and $\angle RPQ = 18^\circ$. Calculate the area of the rectangle.

7. Find the angles marked by letters

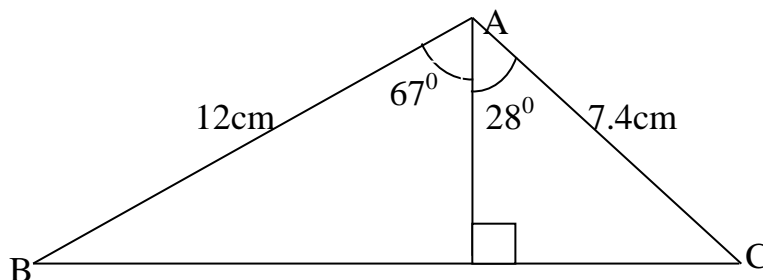
a)



b)



8. Find the length of BC in the triangle below



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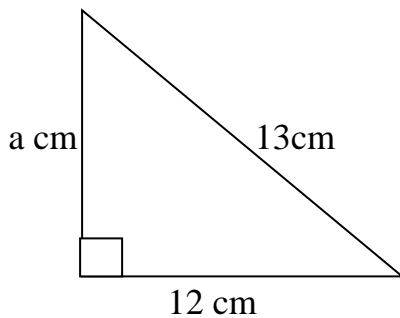
Attempt all questions.

9. By using tables or calculator, write to four decimal places the values of the following:

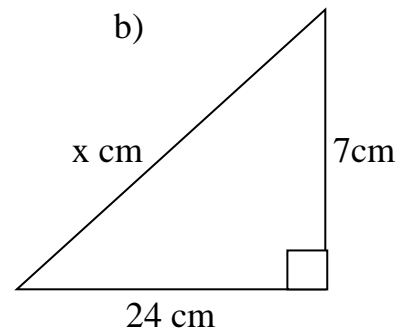
- | | | |
|--------------------|----------------------|----------------------|
| a) $\sin 45^\circ$ | d) $\sin 75.5^\circ$ | g) $\sin 30.3^\circ$ |
| b) $\cos 45^\circ$ | e) $\cos 75.5^\circ$ | h) $\cos 30.3^\circ$ |
| c) $\tan 45^\circ$ | f) $\tan 75.5^\circ$ | i) $\tan 30.3^\circ$ |

10. Find the lengths of the sides marked by letters in each case.

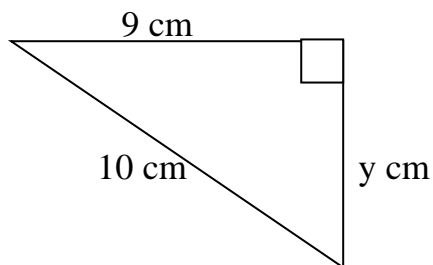
a)



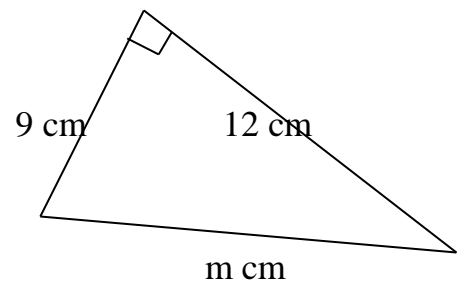
b)



c)

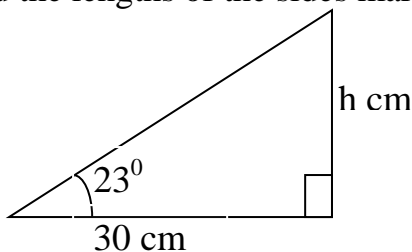


d)

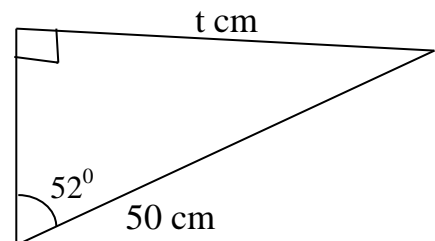


11. Find the lengths of the sides marked by letters. Give your answers to one decimal place.

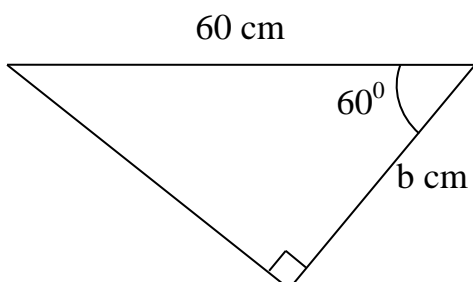
a)



b)



c)



d)

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TIME: 1 hour.

Instructions:

Attempt all questions.

12. Find the equation of a line whose gradient is $\frac{3}{7}$ and passes through the point (4, 5).
13. Determine which of the following the following line are parallel and perpendicular.
- a) $y = \frac{1}{3}x + 8$ and $y = \frac{2x}{6} - 50$
- b) $5x + 6y + 4 = 0$ and $y = \frac{6}{5}x + \frac{2}{3}$
- c) $y = 2x + 6$ and $y = \frac{1}{2}x + 30$
- d) $2y - 7x = 8$ and $4y = 14x - 17$
14. Find the equation of the straight line that passes through the points (3, 4) and (6, 7).
15. Find the equations of lines which passes through:
- (i) (10, 8) and is parallel to the line $4y = 3x + 7$
- (ii) (0, 8) and is perpendicular to the line $3y = -4x + 5$
16. Find the equation of a line that passes through point (4, 0) and is perpendicular to the line joining points (-3, 4) and (2, 5).
17. Find the equation of a line that passes through point (2, 0) and is parallel to the line joining points (-3, 4) and (2, 5).

END

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Instructions:

Attempt all questions.

- Find the equation of lines which pass through the given points and gradients;
 - gradient = 4 and (2, 5)
 - gradient = $\frac{1}{3}$ and (-1, -6)
- If $n(A) = 60$, $n(B) = 48$, $n(C) = 63$.
 $n(A \cap B) = 21$, $n(A \cap C) = 24$, $n(B \cap C) = 15$, $n(A \cup B \cup C) = 120$.
Find $n(A \cap B \cap C)$.
- In Jinja Hospital, the blood of 500 patients was tested. It was found that 228 patients had the A antigens, 59 had the B antigens and 422 had the RH antigen, while 35 had none of these. In addition it was found that 18 had the A and B antigens, 51 had B and RH antigens, 193 had the A and RH antigens.
 - Represent the above data on a Venn-diagram.
 - Find how many patients had all the three types of antigens.
 - Find the number of patients who had;
 - Only one type of antigen.
 - At least two types of antigens.
 - At most one type of antigen.