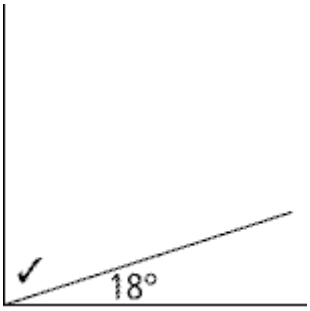
Name: _____ **Class:** _____ **Date:** _____ **ID: A**

Pithy Pythagoras Measures 1 ____ I studied for this test (1 mark) /40

Multiple Choice (worth 1 mark each)
Identify the letter of the choice that best completes the statement or answers the question. Write the letter on the line provided. Do NOT circle your answer.
Did you feel that your teacher taught these concepts well? __Y __N

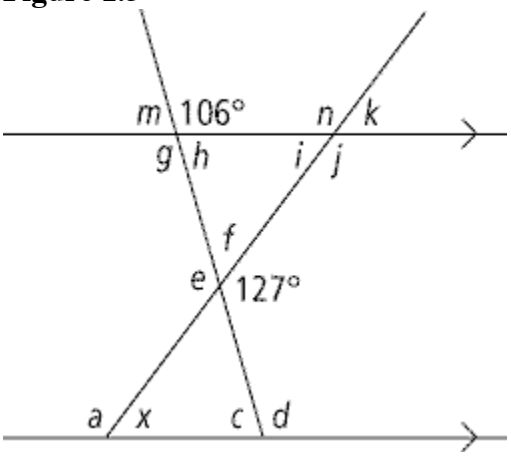
____ 1. What is the measure of the marked angle?



a. 18°
b. 72°
c. 62°
d. none of the above

____ 2. Which group of angles could not be the interior angles of a triangle?
a. 25°, 55°, 100°
b. 22°, 28°, 40°
c. 15°, 80°, 95°
d. 20°, 70°, 90°

Figure 1.5

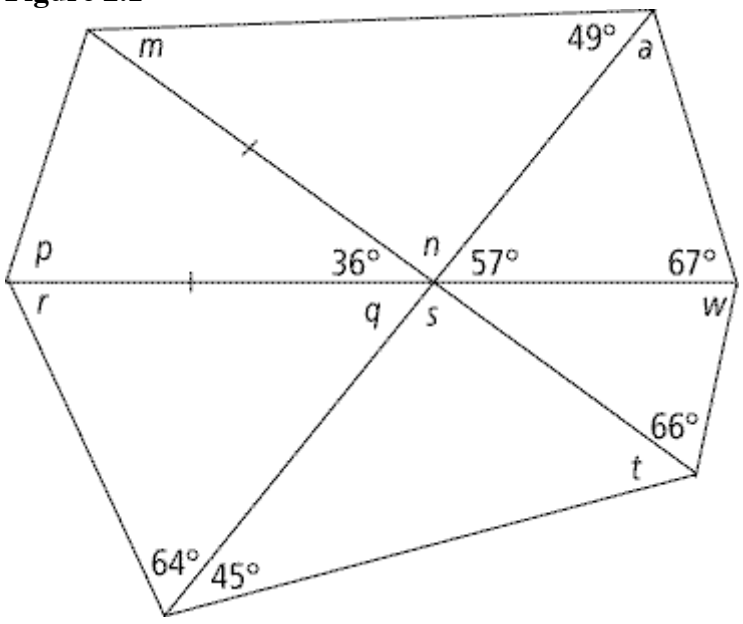


____ 3. What is the measure of ∠d in Figure 1.5?
a. 106°
b. 127°
c. 92°
d. none of the above

____ 4. Which angles are opposite?
a. ∠j, ∠n
b. ∠c, ∠d
c. ∠e, ∠g
d. ∠d, ∠a

____ 5. What are some variations of the Pythagorian Theorem?
a. $a^2 = c^2 - b^2$, $c^2 = b^2 - c^2$
b. $c^2 = a^2 - b^2$, $b^2 = c2 + a^2$
c. $c2 = a^2 + b^2$, $a^2 = c^2 - b^2$
d. all of the above

Figure 2.1



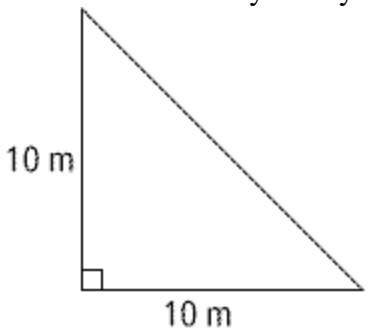
____ 6. In Figure 2.1, what is the measure of ∠m?

a. 36°
b. 64°
c. 72°
d. 44°

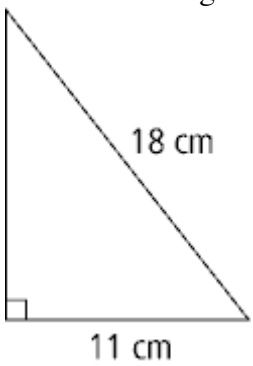
Short Answer (worth 3 marks each)

7. Part 1: Find the missing length using the Pythagorean theorem. Show correct formula AND your steps.

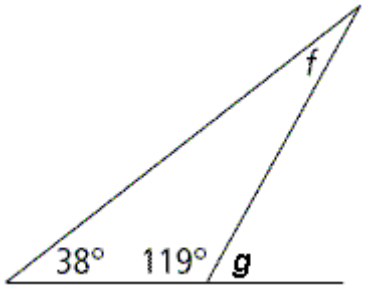
   Part 2: List two ways that you can apply the Pythagorean theorem in real life situations.



8. Find the missing length using the Pythagorean theorem. Show your steps.



9. Find the measures of all the missing angles without using a protractor.

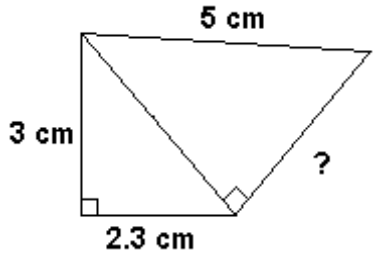


10. What angle is complementary to 18°? _____ (1 mark)
11. What is a corresponding and supplementary angle? (2 marks)

_____

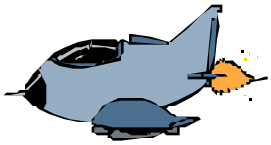
Problems (worth 3 marks each)

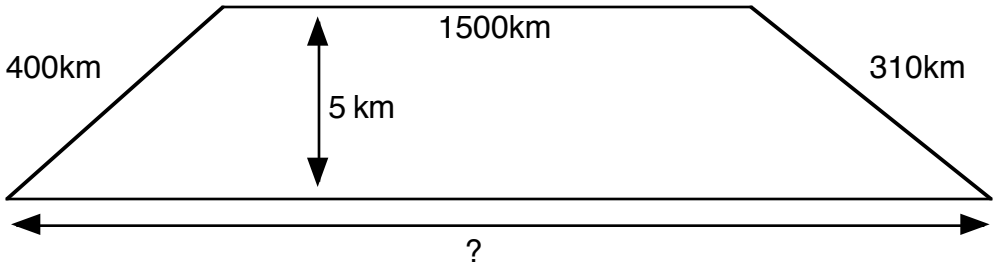
12. Dane, the magic firefighter, places a 4.5 m ladder against a building. If the foot of the ladder is 1.75 m away from the building, how far up the building does Dane's ladder reach?
13. Daniel the cat is stuck in a tree at a point 3 m from the ground. Thuvarkan could get down if he had a plank he could use as a ramp. If a plank was placed 1.2 m from the base of the tree, how long would it need to be so poor Daniel could get down?
14. Find the measure of the missing side of the triangle below using the Pythagorean theorem. Show your work.



Name: _____ **ID: A**

15.



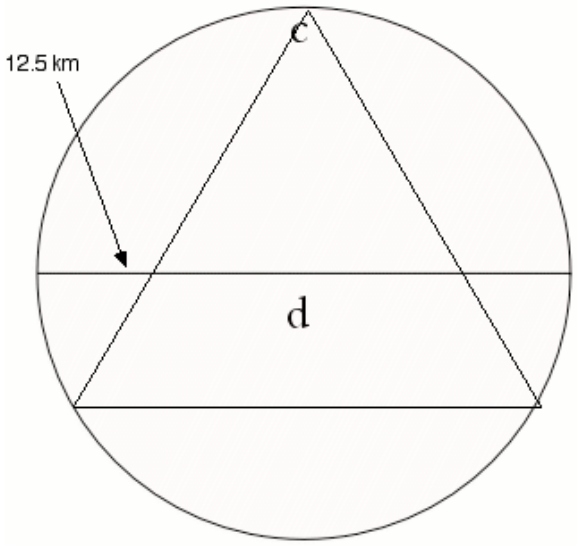


Miranda's experimental fighter jet takes just 2 hours to fly the path above. (5 marks)

1. How far will the plane have travelled?
2. How fast does the plane travel?

Show all your formulas and work below. Round answers to <u>two</u> decimal places.

16. The mysterious Cheyne Triangle encompasses a large area within the region of Peel. Many students have known to disappear within its area (cue scary music). A group of adventurous youth have decided to map out the <u>equilaterial</u> triangle and have created the diagram above. Using the information provided, what are the lengths of the legs of the triangle? What is the area of the Cheyne Triangle? (10 marks)



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Answer Section

MULTIPLE CHOICE

1. ANS: B REF: UC OBJ: 10.5
2. ANS: C REF: UC OBJ: 10.3
3. ANS: B
   Answer: A

   106 degrees

   REF: UC, AM OBJ: 10.3
4. ANS: A
   Answer: ∠j, ∠n of course.

   REF: UC, AM OBJ: 10.2
5. ANS: C
   Answer is C

   $c2 = a^2 + b^2, a^2 = c^2 - b^2$

   REF: UC, AM OBJ: 10.2, 10.3
6. ANS: D REF: UC, AM OBJ: 10.2, 10.3

SHORT ANSWER

7. ANS:

$$a^2 + b^2 = c^2$$
$$10^2 + 10^2 = c^2$$
$$100 + 100 = c^2$$
$$200 = c^2$$
$$\sqrt{200} = \sqrt{c^2}$$
$$14.1 \approx c$$

   REF: UC, AM OBJ: 10.6

8. ANS:

$a^2 + b^2 = c^2$

$a^2 + 11^2 = 18^2$

$a^2 + 121 = 324$

$a^2 = 324 - 121$

$a^2 = 203$

$\sqrt{a^2} = \sqrt{203}$

$a \approx 14.2$

REF: UC, AM OBJ: 10.6

9. ANS:

$\angle f = 23°$

$\angle g = 61°$

REF: AM, UC OBJ: 10.2

10. ANS:
72°

REF: UC OBJ: 10.5

11. ANS:
Corresponding: two angles equal 90 degrees
Supplementary: two angles equal 180 degrees

PROBLEM

12. ANS:

$a^2 + b^2 = c^2$

$1.75^2 + b^2 = 4.5^2$

$3.0625 + b^2 = 20.25$

$b^2 = 20.25 - 3.0625$

$b^2 = 17.1875$

$\sqrt{b^2} = \sqrt{17.1875}$

$b \approx 4.1$

Therefore, the ladder went approximately 4.1 m up the building.

REF: P, UC, AM, C OBJ: 10.6

13. ANS:

$a^2 + b^2 = c^2$

$3^2 + 1.2^2 = c^2$

$9 + 1.44 = c^2$

$10.44 = c^2$

$\sqrt{10.44} = \sqrt{c^2}$

$3.2 \approx c$

Therefore, the ladder would have to be approximately 3.2 m long.

REF: P, UC, AM, C OBJ: 10.6

14. ANS:

Triangle 1

$a^2 + b^2 = c^2$

$3^2 + 2.3^2 = c^2$

$9 + 5.29 = c^2$

$14.29 = c^2$

Triangle 2

$14.29 + b^2 = 5^2$

$14.29 + b^2 = 25$

$b^2 = 25 - 14.29$

$b^2 = 10.71$

$\sqrt{b^2} = \sqrt{10.71}$

$b \approx 3.3$

REF: UC, AM OBJ: 10.6

15. ANS:
Answer:

1. How far will the plane have travelled?

-> 2,209.93 kilometers

2. How fast does the plane travel?

Distance = speed X time
2209.93 = speed X 2
speed = 2209.93/2
speed = 1,104.965 and hour! FREAKING fast!!!!

16. ANS:
Part 1: Formula: a2 + b2 = c2

Answer: 24.21 km each leg of triangle.

Area: 1/2b X h

Height: 20.97 km
Answer: 253.84 km2