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| **NAME:** | **TEACHER:** |

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**YEAR 10 MATHEMATICS**

**2014 END OF YEAR EXAM**

## Trigonometry

**Answer ALL questions in the spaces provided in this booklet. Show ALL working.**

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| **For Assessor’s use only** |
| **Curriculum Level** |

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**SKILLS QUESTIONS**

**QUESTION ONE**

Use your calculator to give values for the following:

* 1. tan 89o = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. cos 14.5o = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. sin-1 0.27 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	4. tan-1(5÷7) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**QUESTION TWO**

In a right-angled triangle, the sides have the following relationship (Pythagoras’ rule).



The following triangles are not drawn to scale. Use Pythagoras’ rule to work out whether each one is a right-angle triangle.



(a) Working:

Right angled? \_\_\_\_\_\_\_\_\_\_\_\_\_

(b) Working:

 Right angled? \_\_\_\_\_\_\_\_\_\_\_\_\_

**QUESTION THREE**

1. The Transamerican Pyramid in San Francisco has a slant height of 225 m and inclines at an angle of 78o. Calculate x, the height of the building.



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1. The height and half-width of the Eiffel Tower in France are given below.



1. If a cable (x) was run from the top to the base of the tower, calculate how long it would be.

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1. If the cable was attached to the base with an angle of elevation of 76o instead, how high up the tower (x) could it reach?



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1. The “London Eye” is a giant Ferris wheel. Its support legs form an isosceles triangle with the ground. The legs are 58 m long and are 20 m apart at the base.



1. Calculate the height of the hub of the wheel (the length of the dotted line in the diagram).

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(ii) Calculate the angle that each leg makes with the ground.

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1. 5th Avenue, East 23rd St and Broadway in New York city nearly form a right angled triangle.



If Broadway didn’t curve, what angle (A) would it form with 5th Avenue?

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**QUESTION FOUR**

The famous “Leaning Tower of Pisa” inclines 4 degrees and is 56.7 m above the ground at the highest point.



1. How high (x) would it stand if it **wasn’t** leaning?

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1. The tower leans less than it used to due to structural repairs. It used to have an incline of 5.5 degrees. Use your answer to part (a) to calculate the previous height of the highest point of the tower.

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**QUESTION FIVE**

1. The glass pyramid at the Louvre is surrounded by fountains and three smaller pyramids. The pyramid has a square base. The large pyramid and ponds together form ¾ of a large square. The lines connecting the three mini-pyramids (shaded) also form part of a square. These squares sit inside each other, forming 45 degree angles.



Calculate:

1. the distance between the mini-pyramids (ii) the side length of the largest (incomplete) square.

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1. The Mayan temple of Kukulcan is nearly a square-based pyramid in shape. Calculate the height it would be if came to a peak (as in the diagram below.)



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