Diwali maths activities for IB Maths SL and HL: Beyond school

IB Math Revision · Beyond school: for adults and maths fans · Student sheet

Name _____ Class _____ Date _____

No calculator needed. Every answer works out exactly.

Starter (5 minutes)

1. How many diagonals does a regular octagon have?

2. What is the last digit of 2^{2026}?

3. How many squares of any size have their corners on a 4 by 4 grid of dots, with sides along the grid lines?

4. You light 12 lamps over the 5 nights of a festival, at least one each night. In how many ways can you choose how many to light each night?

Main activity (30 minutes)

Task A: A necklace of lamps

Six lamps stand in a circle, and each is red or gold.

a. If the lamps are in fixed numbered places, how many colourings are there?

b. How many colourings have exactly two gold lamps?

c. Now two colourings count as the same if one is a rotation of the other. How many different colourings are there?

Task B: Rangoli tiles

A path is tiled with 1 by 2 rangoli tiles (dominoes), which can lie either way.

a. How many tilings are there of a 2 by 4 path?

b. How many tilings are there of a 2 by 10 path?

c. How many tilings are there of a 3 by 4 floor?

Extension

1. Using the rule from b3, how many tilings are there of a 3 by 8 floor?