

# Grade 7

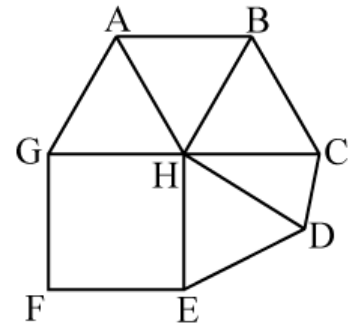
## EXTRA CHALLENGES - SET I

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1. Before Dean can go on a trip to Hong Kong, he must first exchange some of his Canadian money for Hong Kong dollars. At the beginning of the trip, he could buy 7 Hong Kong dollars for one Canadian dollar. When he returned, he would have to exchange 8 Hong Kong dollars for one Canadian dollar. If Dean ended up with 56 Canadian dollars and left with 1000 Canadian dollars, how many Hong Kong dollars did he spend?

2. In the diagram, a heptagon (7 sides)  $ABCDEFGH$  is drawn with centre  $H$ . The heptagon is subdivided into 4 equilateral triangles, a square and an isosceles triangle  $CDH$ . Calculate to the nearest degree the measure of  $\angle HDC$ .



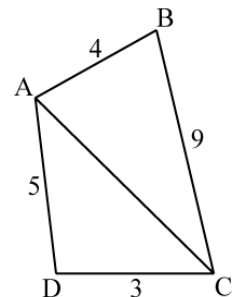
3. A group of bacteria doubles every second until it reaches the maximum population. If it reaches the maximum population in 1 minute, how long will it take to reach half the maximum population?

### Did You Know?

The largest bacterium ever discovered is the *Thiomargarita namibiensis*. Its width is about 75mm long making it easily visible to the naked eye.



4. There are five integers. The median of these numbers is 25, while the mode of these numbers is 28, and the mean is 22. If  $a$  is the smallest number, what are the possible values of  $a$ ?
5. Quadrilateral  $ABCD$  is drawn with a diagonal connecting  $AC$ . If  $AB = 4$ ,  $BC = 9$ ,  $CD = 3$ , and  $DA = 5$ , what is the interval for all possible lengths  $AC$ ?



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