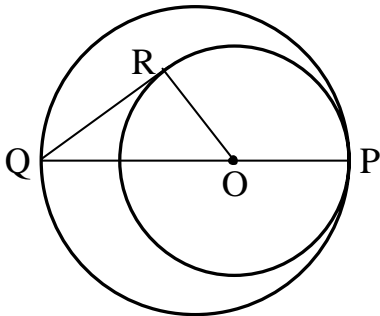1.   Every whole number larger than the number 1 has at least 2 factors:
      the number itself and the number 1.
      Find the sum of all the factors of 16.   _____   1

2.   In the diagram, a circle of radius 6 is internally tangent at P to
      a circle of radius 8. PQ is a diameter of the larger circle,
      QR is tangent to the smaller circle,
      and OR is a radius of the smaller circle.
      Find the area of the triangle OQR.   _____   2
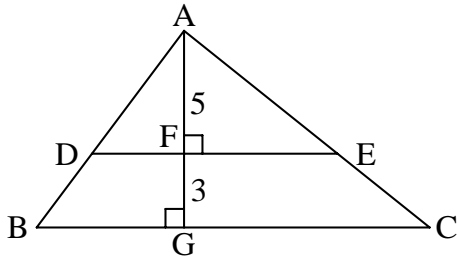

3.   Mima's house is located 5.7 km east of the train station.
      Nina's house is 2.7 km west of the station, and Lila's house
      is exactly halfway between Nina's house and Mima's house.
      What is the distance from Lila's house to the station?
      Give your answer in km correct to one decimal place.   _____(km) 3

4.   In a certain sequence, $a_1 < 0$, $a_2 > 0$, and $a_3 > 0$.

      For $n > 2$, $a_n = a_{n-1} + a_{n-2}$.

      Two consecutive terms of the sequence have values of 29 and 47.
      Find the value of $a_1 + a_2 + a_3$.   _____   4

5.   Nick's monthly salary was increased by 10% last month,
      and now it is $2222.
      What was his monthly salary before the increase (in dollars)?   _____($) 5

6.   In the diagram, BCED is a trapezoid. The length of DE is 10.
      The line segment AG is a height of the large triangle,
      and it intersects DE at F. Also given: AF=5, and FG=3.
      Find the area of the trapezoid.   _____   6
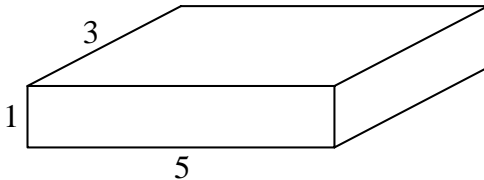

7.   Bus fare in Vancouver on the route from Spanish Banks
      to UBC is $2.25 per adult and $1.50 per junior. Last Saturday,
      610 people rode the bus, and paid a total of $1218.
      How many juniors rode the bus that day?   _____(juniors) 7

8. $\frac{1}{6}$ of Diophantus' life was spent as a youth, and then

      it took $\frac{1}{12}$ of his life to lengthen his beard. After another $\frac{1}{7}$
      of his life he got married, and then, 5 years later, a child was born.
      The child left our world to live with the angels when he turned
      2 years old and this happened 2 years before Diophantus

      reached $\frac{1}{2}$ of his life. How old was Diophantus when he died?   _____(years) 8

Grade Six (6) Division

9.   The rectangular box, as shown in the diagram, has sides 1, 3, and 5.
      What is the surface area of the box?   _____   9

```
     3
        _____
       /               /|
   1  /               / |
     /_____/  /
     |               | /
     |_____|/
            5
```

10.   The human body has (on average) 115 trillion cells (115×10^{12}).

      The weight of each cell (on average) is 54×10^{-11} grams.
      What is the average weight of the human body (in kilograms)?
      Give your answer as a decimal, correct to one decimal place.   _____(kg) 10

11.   What is the remainder when 10^{15} is divided by 997?   _____   11

12.   Aziz wrote all of the ten thousand integers from the
      number 1 to the number 10000, one by one, in increasing order.
      The beginning of his sequence looks like this:
      1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, …
      Note that he wrote the digit 0 for the first time when he wrote
      the number "10", and he wrote it for the second time when he
      wrote the number "20".
      In what number N, of his sequence,
      did he write the digit 0 for the 2007-th time?   _____   12