



Logic and Maths Puzzles # 64 November 2017

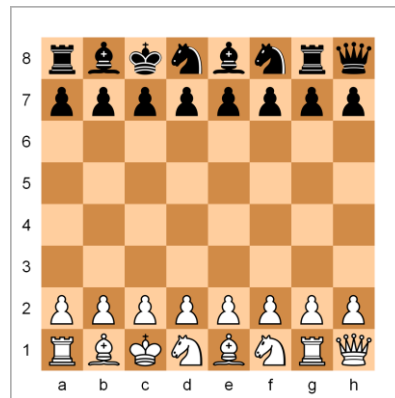
1. Bill and celebrate the same birthday.

In 2012, Bill was half Fred's age.

In 2015, Bill's age reached 60% of Fred's. In what year will Fred be 50% older than Bill?



2. How many different opening moves can be made by one player in Chess?



3. What numbers are represented by the Roman Numerals:

(a) **MCLV**?

(b) **MCLIV**?

(c) **MCLVI**?

4. Scott lives 15 km south of Grandma.

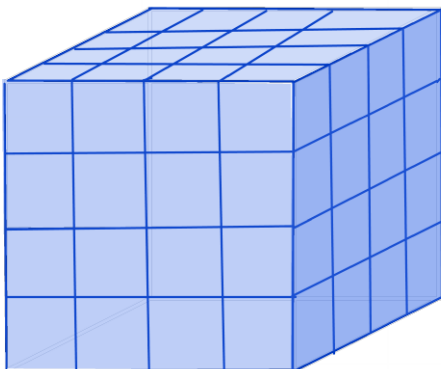
Steffi lives 20 km north of Byron.

Robin lives 5 km south of Scott.

Bryon lives 10 km north of Robin.

Caitlin lives 15 km south of Bryon

How far do Steffi, Robin, Byron and Caitlin each live from Grandma's house?



5. A solid, four centimetre cube is coated with blue paint on all six faces.

Then that cube is cut into smaller one centimetre cubes.

These new one centimetre cubes will have either three blue faces, two blue faces, one blue face, or no blue faces.

a. How many of the cubes will have three blue faces?

b. How many of the cubes will have two blue faces?

c. How many of the cubes will have one blue face?

d. How many of the cubes will have no blue faces?

6. It's Olivia, Charlotte and Amelia's birthday.
 Olivia's age times Charlotte's age is 48.
 Amelia is half as old as Charlotte
 Olivia is two years younger than Amelia
 How old are Olivia, Charlotte and Amelia?



7. A family of Mum, Dad and five kids went to the pictures.
 The children were charged half price.
 If the total cost was \$51.75, what was the price of an adult ticket?

8. A fisherman in a boat at 10:00 am starts to row upstream at 5 km/h relative to the river's current.



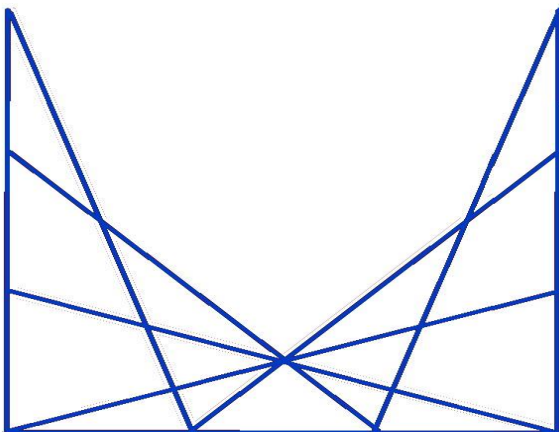
The sudden motion causes his hat to fall off and to begin to float downstream.

At 10:05 am, he realizes he has lost his hat and starts rowing downstream in pursuit of the hat, again at 5 km/h relative to the current.

If the river is flowing at 3 km/h, at what time will he catch up with his hat?

9. If the time is both x squared minutes past 7pm AND $7x$ minutes before 8pm,
 a. What number is x ?
 b. What time is it?

10.



How many triangles are in this figure?

Solutions:

1. **2018**

2. **20**

(The pieces which are capable of making the first move are the pawns and the knights. There are eight pawns, each of which may advance either one or two ranks; two knights, each of which may advance to rank 3 either to the left or to the right)

3. (a) 1155 (b) 1154 (c) 1156

4. Steffi 10km; Robin 20km; Byron 10km; Caitlin 25km

5. a. **8** b. **24** c. **24** d. **8**

6. Olivia is **4** years old, Charlotte is **12** years old, Amelia is **6** years old

7. **\$11.50**

8. **10:10 am**

If his speed is relative to the current in both directions, then the current can be ignored. If it takes 5 minutes to row upstream, then it takes another 5 minutes to row back downstream for the hat.

9. (a) $x = 5$ (b) **7:25 pm**

10. **32**