Meeting 3
Math Kangaroo Problem Solving

October 18, 2015

1. The first day of a month is a Sunday. There are 5 Sundays in this month. The last day is a Tuesday. How many days are there in that month?

\[
\begin{array}{cccccc}
S & M & T & W & R & F & S a \\
S & M & T & W & R & F & S a \\
S & M & T & W & R & F & S a \\
S & M & T & W & R & F & S a \\
S & M & T & W & R & F & S a \\
S & M & T & W & R & F & S a \\
\end{array}
\]

There are 4 complete weeks with 3 extra days.

This equals \[ 4 \times 7 = 28 \]

\[ \text{\#weeks} \quad \text{\#days per week} \]

added to 3 extra days.

\[ 28 + 3 = 31 \text{ days} \]

What month could this be?

Jan, Mar, May, July, Aug, Oct, Dec

2. Which number should be at the question mark in the pyramid?

\[
\begin{array}{ccc}
\text{?} & \text{...} & 6 \\
3 & 5 & 7 \\
2 & 4 & 6 & 8
\end{array}
\]

Note that the diagonals from left to right are ascending consecutive #s, while diagonals from bottom to top, right to left are descending consecutive #s.

5
3. There are sheep and chickens on a farm. The number of chickens is equal to the number of sheep. All together, they have 24 legs. How many chickens and how many sheep are there on the farm?

Sheep = 4 legs  Cows = 4 legs

If 24 total legs, then must have 6 total animals \(\frac{24}{4\text{ legs}} = 6\text{ animals}\). Since 3 cows = 3 sheep, half of these 6 animals are cows, and the other half are sheep.

3 cows

3 sheep

4. Last week, John walked a total of 26 kilometers. Sarah walked half of this distance plus another 17 kilometers. Who walked more? By how much? Draw a picture.

John \[\begin{align*}
26 \text{ km} &= 26 \text{ km} \\
\end{align*}\]

Sarah \[\begin{align*}
13 \text{ km} + 17 \text{ km} &= 30 \text{ km} \\
\frac{1}{2} \text{ of distance} \text{ John walked.} \\
\end{align*}\]

Sarah walked more, by 30 km - 26 km = 4 km
5. A log that is 15 meters long needs to be cut into pieces that are 3 meters long. How many cuts do we need to make?

3 meters goes into 15 meters 5 times. \((15 ÷ 3 = 5)\).

You need to cut the log only 4 times to achieve this.

6. Dad and son came home after a day of working on the farm. Mom offered to make them cookies for all their hard work. She made a total of 20 cookies. The father ate 6 more cookies than the son. The father and son ate all of the cookies. How many cookies did the son actually eat?

Father ____________ 0 0 0 0 0 0

Son ____________ F

Let the bar represent the amount the son ate.

Then \(20 - b = 14\) must be twice the # the son ate.

The son ate 7, and the father ate 13.

Alternatively, guess and check by plugging in #s and verifying.
7. Which of the figures below cannot be cut out from this figure:

(a) 

(b) 

(c) 

(d)
8. Kuba bought a chocolate heart for his mother (see the picture). Each candy square weighs 10 grams. What is the weight of the whole heart?

Find the number of candy squares in the chocolate heart. This can be done by splitting the heart into sections.

\[ \text{Region I} + \text{Region II} + \text{Region III} \]

(a) 340 g
(b) 360 g
(c) 380 g
(d) 400 g
(e) 420 g

\[ \text{Weight of whole heart} = (40 \times 10 \text{ g}) = 400 \text{ g} \]
9. The buildings on Color Street are numbered from 1 to 5 (see the picture below). Each building is colored with one of the following colors: blue, red, yellow, pink or green. It is known that

- The red building is only next to the blue building.
- The blue building is between the red building and the green building.

What is the color of the building number 3?

Scenario 1 → R B G
Scenario 2 → G B R

**Green**

10. How many cubes have been removed from the first structure to make the second one? **7 cubes**

How many cubes are there left in the second structure? **11 cubes**
11. Helen has $5. She is going to buy 5 notebooks that cost 80 cents each and a certain number of pencils that cost 30 cents each. What is the biggest number of pencils that she can buy?

\[(5 \text{ notebooks}) \times (80 \text{ cents each}) = 4 \text{ spent on notebooks}\]

\[5 - 4 \text{ on notebooks} = 1 \text{ for pencils}\]

At 30 cents each, and $1 left, Helen can only buy 3 pencils \((8 \times 30 \text{ cents} = 90 \text{ cents})\)

[3 pencils]

12. There are 9 lanterns on one side of an alley in the park. The distance between neighboring lanterns is 8 meters. Gregory went through this alley from the first lantern to the last lantern. How many meters did he walk?

\[(8 \text{ m}) \times (8 \text{ spaces between the lanterns}) = 64 \text{ m}\]
13. Five identical rectangular plastic sheets were divided into white and black squares. Which of the sheets from A to E has to be covered with the sheet right below this question in order to get a completely black rectangle?

Must rotate the sheets to stack on top of each other.
14. Four people can sit at a square table. For the school party the students put together 7 square tables in order to make one long rectangular table. How many people can sit at this long table now?

![Diagram of tables]

- 1 table seats 4
- 7 tables seat 16

When tables are placed together, fewer people can sit at each table.

[Handwritten: 16 people]

15. There are four siblings in the room: Anna, Brian, Corey, and Dalia.

- Anna is twice as old as Brian.
- Brian is 3 years older than Dalia.
- Corey is half Dalia’s age.
- Corey is 5 years old.

How old is Anna?

Corey = 5 yrs old.
Corey is half of Dalia’s age, so Dalia must be 10.
Brian is 3 yrs older than Dalia, so he is 13.
Anna is twice as old as Brian, so she is (13 x 2) = 26 yrs old.

[Handwritten: 26 years old]