1. Four friends each attempted a different weight-loss diet

- Anne lost fewer kilograms than the dieter who used the banana diet.
- The four people are Clive, the friend who used the seafood diet, the friend who used the banana diet and the dieter who lost 8 kg.
- Don used the paleo diet.
- The friend who lost 4 kg used the carrot diet.

    a. Who lost the most weight?

    b. Which diet was least successful?

    c. Who attempted the banana diet?

	Anne	Brenda	Clive	Don	Paleo	Seafood	Banana	Carrot
2 kg lost								
4 kg lost								
6 kg lost								
8 kg lost								
Paleo								
Seafood								
Banana								
Carrot								

2. Beverley wants to save $50 to buy her mum a gift.

On Day 1 she puts 10 cents in her piggy bank.

On Day 2 she puts 10 cents plus a further 20 cents in her piggy bank.

On Day 3 she puts 10 cents plus 20 cents plus a further 30 cents in her piggy bank, and so on.
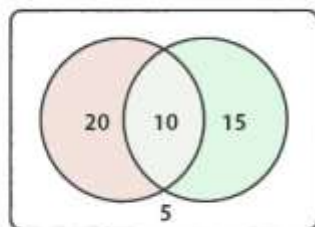
Following this pattern, on which day will she pass her savings goal?

3. There are 50 chocolates in a box; 30 have a caramel filling; 25 have a coconut filling; 10 have both caramel and coconut, and the rest are plain; no filling.
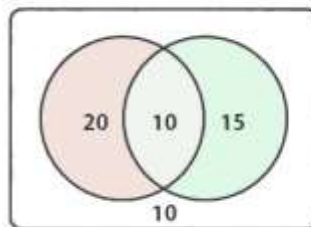
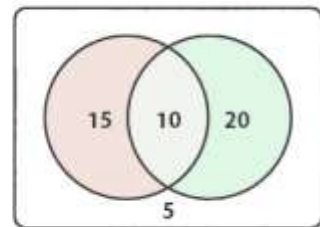Which of the following Venn diagrams best illustrates that: A, B, C or D?

 = caramel

 = coconut

| 30 | 10 | 25 |
| 50 |
A

| 20 | 10 | 15 |
| 5 |
B

| 20 | 10 | 15 |
| 10 |
C
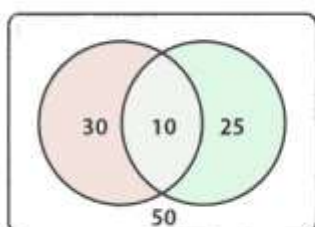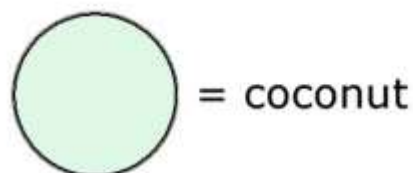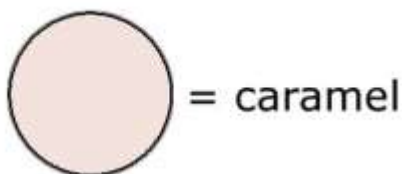
| 15 | 10 | 20 |
| 5 |
D

4. What is the cube root of 729?

5. In order to complete a DIY concreting job I first carried some sand to the job site as full buckets.

I mixed in five sixths of the sand, (which was not quite enough) so I added another half bucket.

On finishing the job I still had a bucket of sand left over.

How many buckets of sand did I carry to the job site?

6. The three Smith children decide to shell a kilogram of peas. Working by themselves, it takes the eldest child 20 minutes, the middle child 25 minutes and the youngest child 50 minutes to shell that many peas.

How long should it take (to the nearest minute) if they work cooperatively?

7. Zig and Zag have 15 ice creams between them.
If Zig managed to increase his ice cream tally by 50% he would have five more than Zag has now.

How many ice creams do they each have?

8. One half of a certain number plus one quarter of the same number equals three less than the number. What is the number?
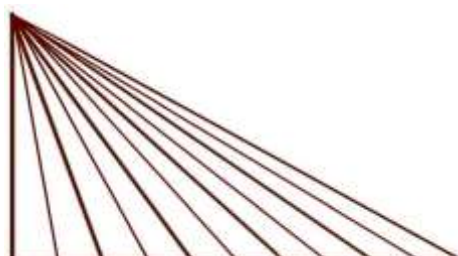
9. Eight times a certain number exceeds half that number by 15. What's the number?

10.
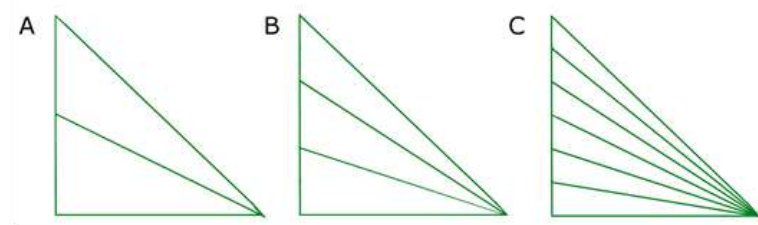
Given that the TOTAL number of triangles in each diagram on the left.

is   A. 3   B. 6   C. 21

Look for a pattern or rule, then calculate (don't count) the total number of triangles in this figure

Answers:

1. a. Don   b. seafood   c. Brenda

2. Day 14

3. Diagram B

If 30 chocolates contain caramel, and 10 contain a mixture of caramel and coconut, then to calculate the ones containing JUST caramel = 30 − 10 = 20.

If 25 chocolates contain coconut, and 10 contain a mixture of caramel and coconut, then to calculate the ones containing JUST coconut = 25 − 10 = 15.

So the sum of the chocolates that contain JUST caramel + the chocolates that contain JUST coconut + the chocolates that contain a mixture of caramel and coconut = 20 + 15 + 10 = 45.

The number of plain chocolates = 50 − 45 = 5

4. 9

5. 9 buckets

Let the number of buckets I allowed to equal b

Then $5b/6 + ½ + 1 = b$

$5b/6 + 1 ½ = b$

Multiplying through by 6:

$5b + 9 = 6b$

$6b − 5b = 9$

$b = 9$

6. 9 minutes

First calculate the relative rate at which each child can shell peas. The amount of peas able to be shelled in a given time is additive.

One possible approach is as follows:

Oldest child shells 1000g of peas in 20 minutes. That's 1000 ÷ 20 = 50g / min
Middle child shells 1000g of peas in 25 minutes. That's 1000 ÷ 25 = 40g / min
Youngest child shells 1000g of peas in 50 minutes. That's 1000 ÷ 50 = 20g / min

So working together they can shell 50 + 40 + 20 = 110 g / min

It will take them 1000 ÷ 110 = 9.09 minutes to shell 1 kg of peas.

7. Zig has 8 ice creams, Zag has 7

Let the number of ice creams Zig and Zag now have be Z_i and Z_a respectively.

Then $Z_i + Z_a = 15$

And $3Z_i /2 = Z_a + 5$

Substituting $Z_i = 15 - Z_a$

$3 \times (15 - Z_a) / 2 = Z_a + 5$

$45 - 3 Z_a = 2Z_a + 10$

$35 = 5 Z_a$

$Z_a = 7$

So Zag has 7 ice creams, Zig has 8

Proof: If Zig increased his ice creams by 50% he would have 12, which is 5 more than Zag has

8. 12

9. 2

10. 55.

For figure A, the total number of triangles (3) can be given by **2 + 1 = 3**
Note that figure A is made of two "individual" triangles which when combined form a third larger triangle.

For figure B, the total number of triangles (6) can be given by **3 + 2 + 1 = 6**
For figure C, the total number of triangles (10) can be given by **4 + 3 + 2 + 1 =10**

For the brown figure is similarly constructed to figures A, B & C except that there are 10 "individual" triangles

10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 55