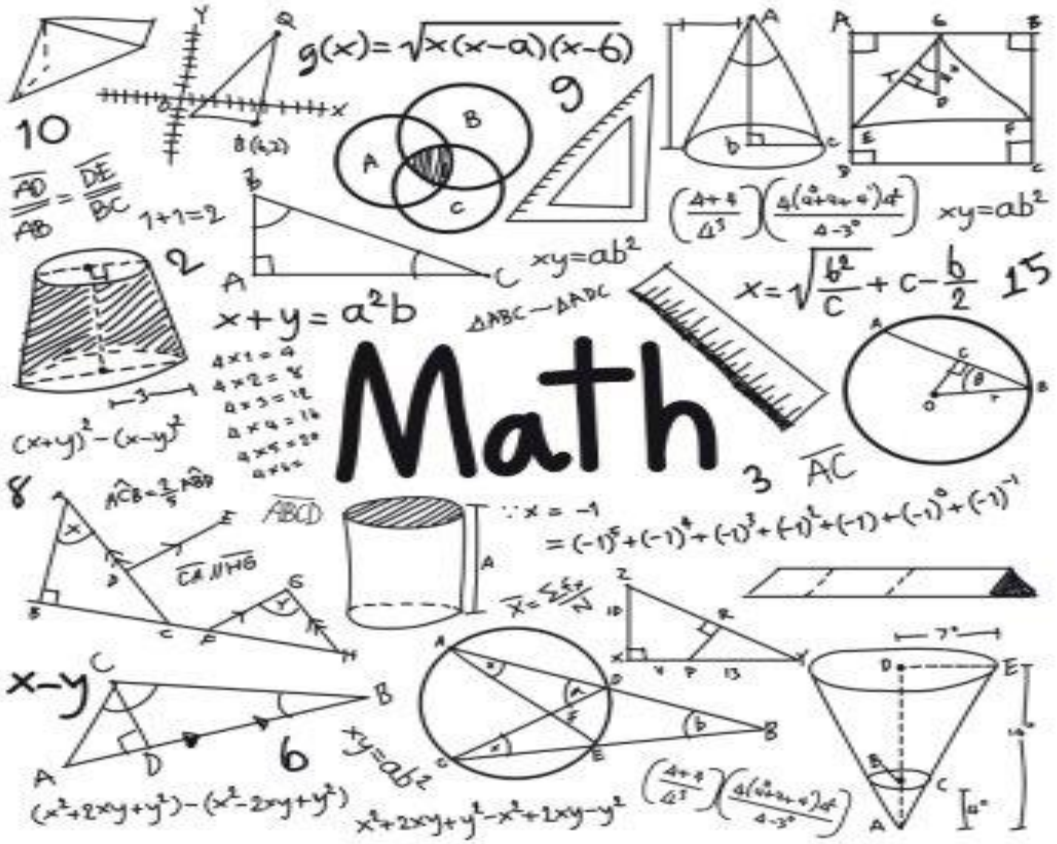
Year 10 Foundation Preparation Maths Booklet



Getting ready for Year 10 Maths

**Key steps to success - ** Complete each task on the following slides reviewing important KS3 content you need to know before starting KS4. These tasks cover; problem-solving, algebra, parallel line laws, money, and indices.

How to do it - on paper, in your old book, or on your iPad.

We don't mind how you do it as long as you have a go at each task!

If you are struggling with any of these questions why not go to Corbett maths which has extra videos, worksheets and GCSE questions on every single topic? You can also recap other topics you have done this year in maths or get ahead of the game and learn a new topic!

https://corbettmaths.com/contents/

Task 1 – Key words

- Find the hidden key words in this word search.

  Then look up each word on google in a maths context and write down the definition.

  For example – for the word solving you should google ‘what is the definition of solving in maths’

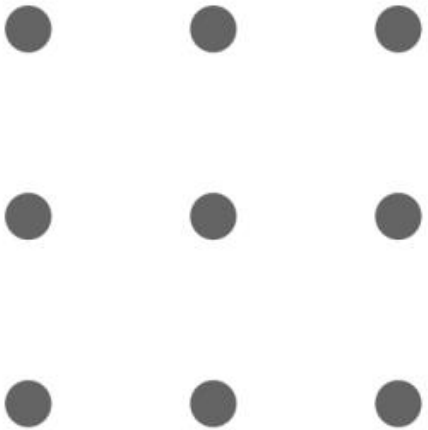
Addition
Brackets
Division
HCF
Inverse
Multiple
Number Line
Prime
Square Root

Approximation
Column Method
Estimation
Index
LCM
Multiplication
Partitioning
Round
Subtraction

Bidmas
Common Factors
Greater Than
Indices
Less Than
Negative
Positive
Square Number
Venn Diagram

Task 2 – Problem Solving

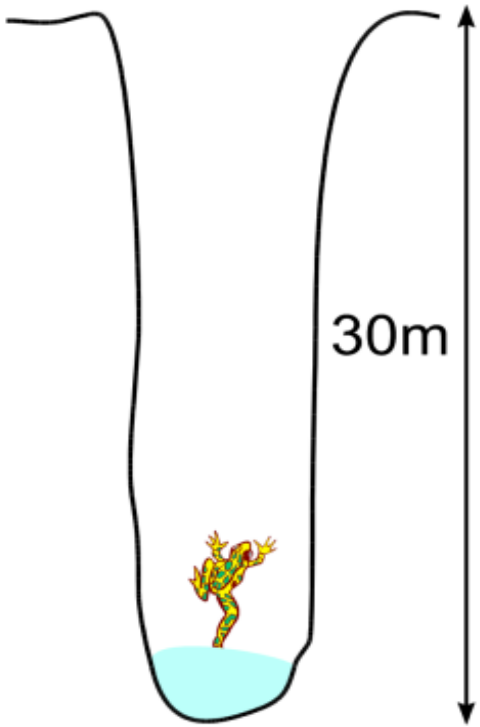
Put 9 dots in a square like this



Can you go through all 9 dots with four straight lines?

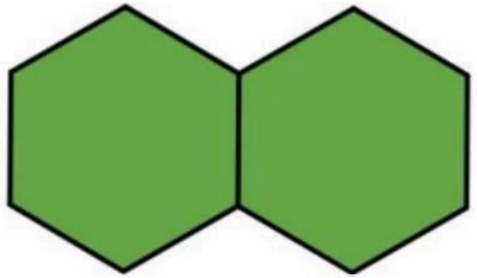
You can't take your pen off the paper.
You can start where you like.

A frog has fallen into a pit that is 30m deep.



Each day the frog climbs 3m, but falls back 2m at night. How many days does it take for him to escape?

Task 3 – Problem Solving

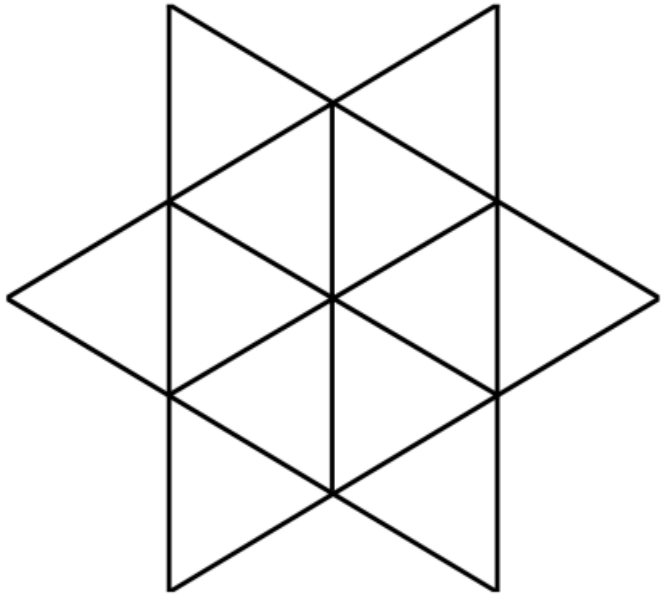


Heather can make two connected hexagons by drawing 11 lines.

What is the minimum number of lines Heather needs to draw 12 hexagons?

Extension: What numbers of hexagons are the most efficient to draw and why?

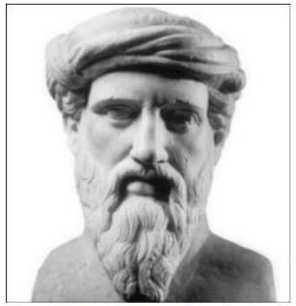
How many triangles can you see in this picture?



Hint – there are more than 20!

Task 4 – Research these famous mathematicians and Write 2 more sentences about each

Famous Mathematician



Pythagoras was an Ancient Greek mathematician who discovered an amazing fact about right angled triangles. You will learn about this in GCSE maths. You can watch this video to find out about his "stupid death"…
https://youtu.be/iBqEpC-dHqk

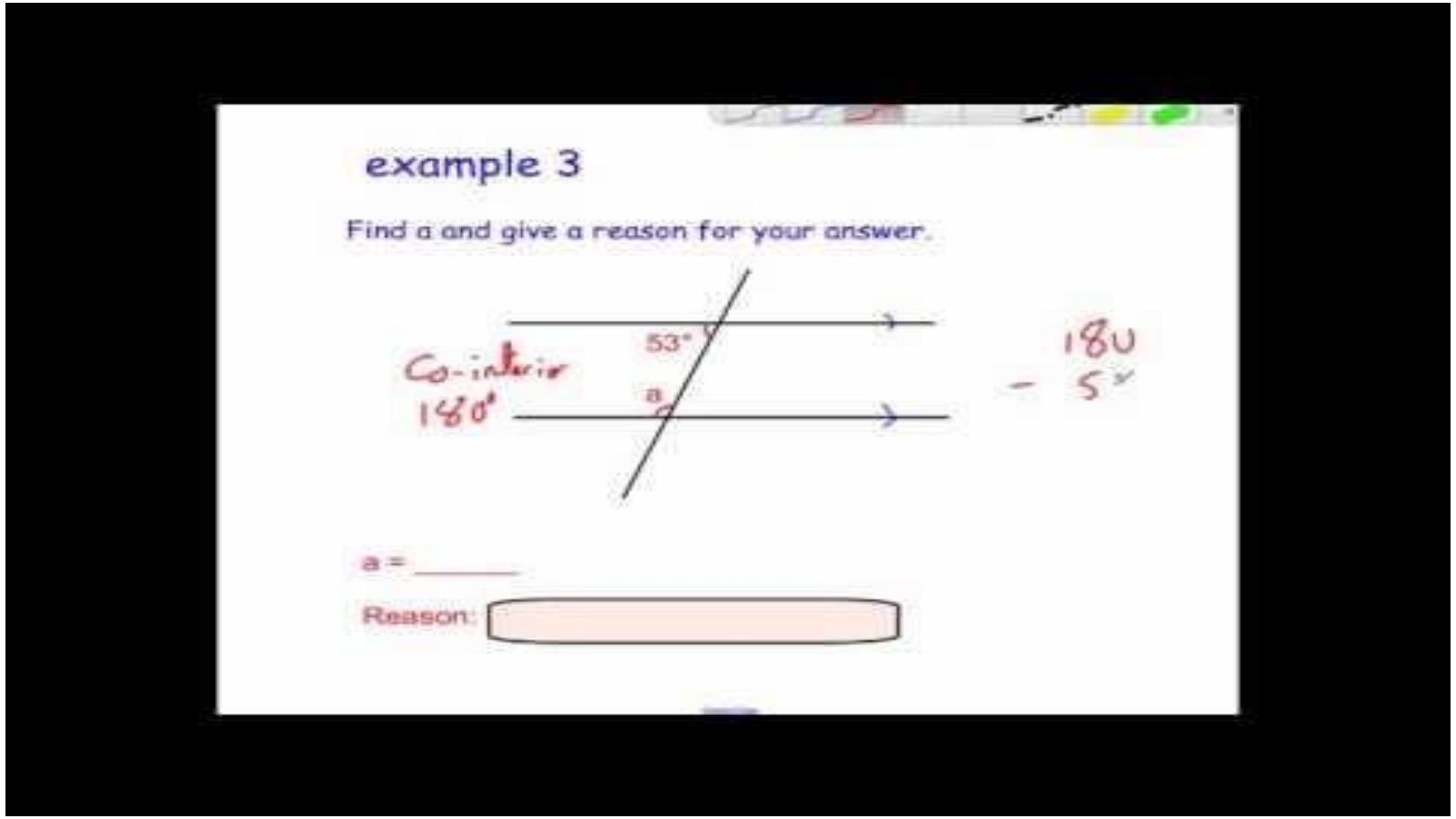
Famous Mathematician

Ava Lovelace was the daughter of famous poet Lord Byron and is considered to be the first "computer programmer" after she wrote a computing machine algorithm in the 19th Century.

Famous Mathematician

Hannah Fry is a world-leading mathematician who does a lot of work for the BBC. Why not look up one of her shows to watch!?!

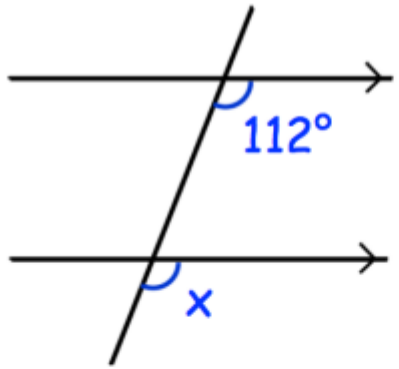
Task 5a – Parallel Line Laws – Watch the video



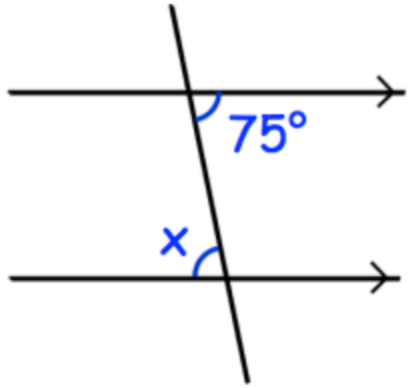
https://corbettmaths.com/2013/04/04/parallel-lines-angles/

Task 5b – Find the missing angles

(a)



(b)



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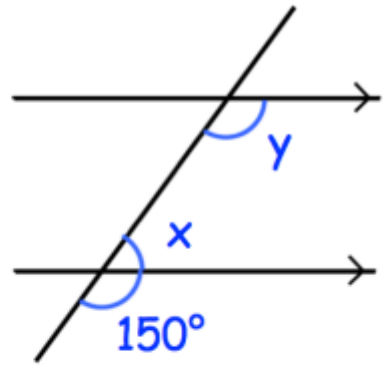

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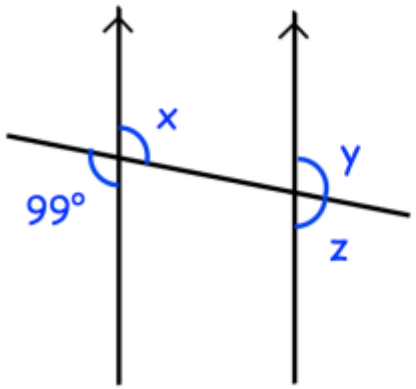

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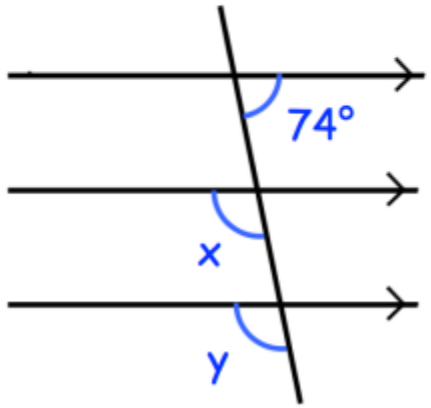

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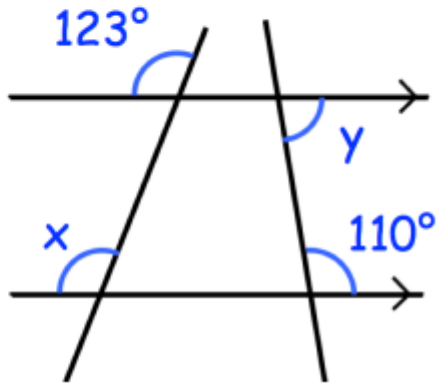
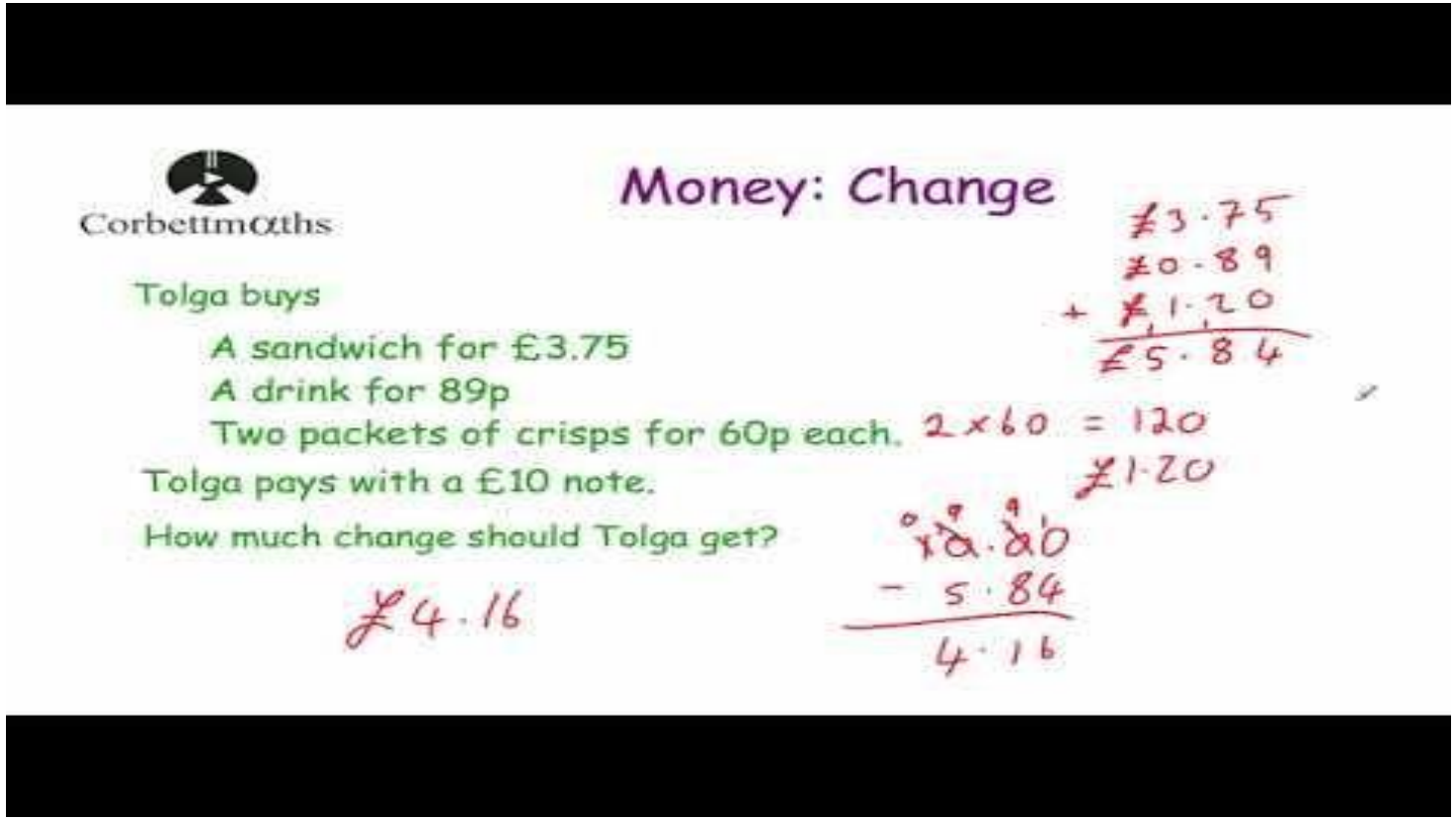


Task 6a – Money problems – Watch the video



https://corbettmaths.com/2021/12/04/change-money-video/

Task 6b – Money problems

Task 6c – Money problems

Irene's Ironing

Service

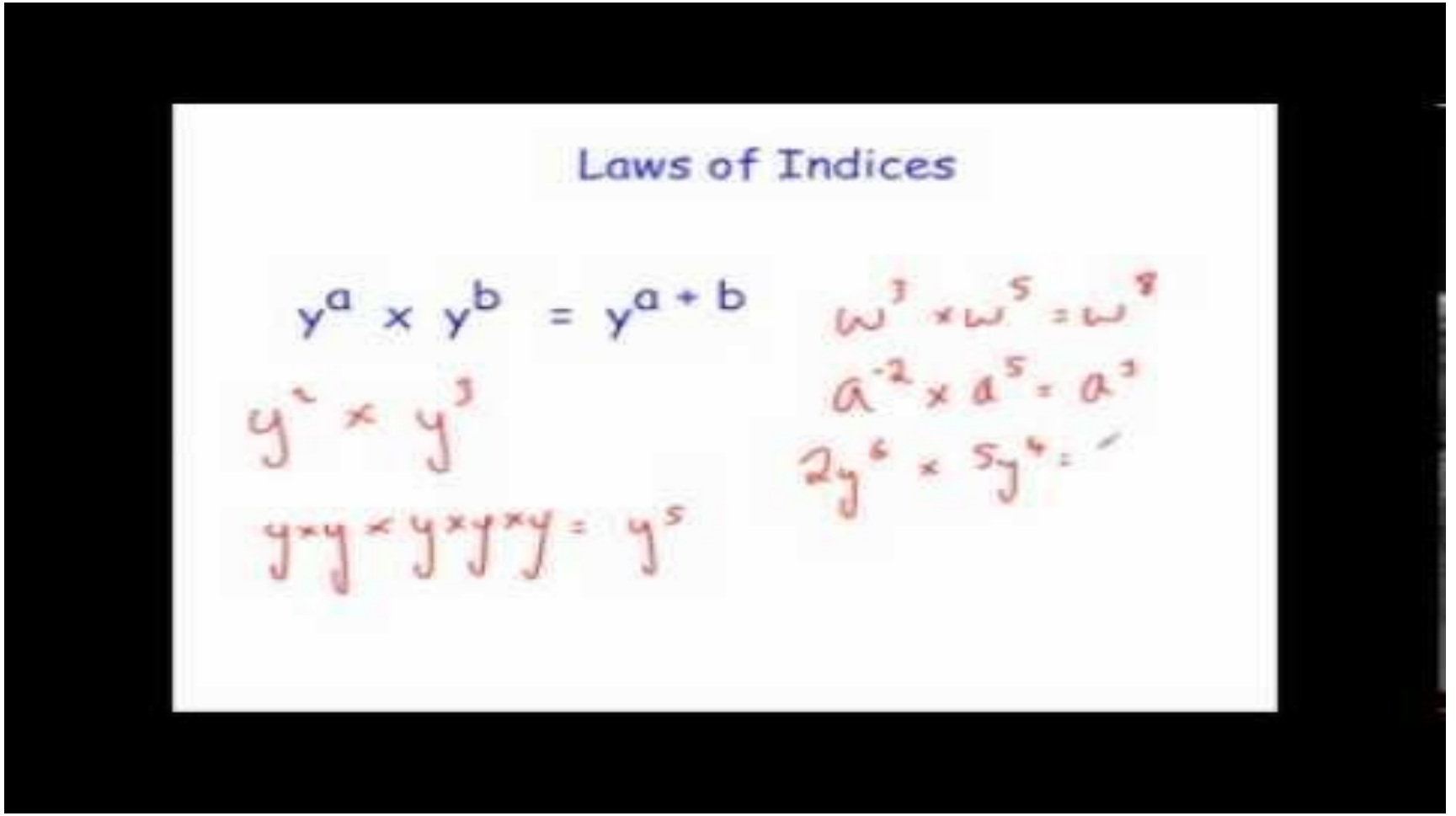
£2.78 per shirt

85p per pair of pants

1. Show how much Irene will charge to iron:
   a. 5 shirts
   b. 13 shirts and 3 pairs of pants
   c. 27 pairs of pants and 10 shirts

2. If Irene received £13.60 just for ironing pants, how many pairs did she iron?

Task 7a – Indices – Watch the video



https://corbettmaths.com/2013/03/13/laws-of-indices-algebra/

Task 7b - Indices

The Mystery of Roger's Fedora

It's the night before the Wimbledon final and Roger, the favourite for the title, has lost his lucky fedora!

He left it in his locker, which he made sure he locked carefully before he went back to his hotel. Somebody had clearly broken into it to steal the treasured hat!

He suspects it might be his opponent, Nohat Djokovic, who has taken it; however, a police search found nothing. It must be somebody else!

Your task is to help Roger find his fedora and ensure the culprit is caught.

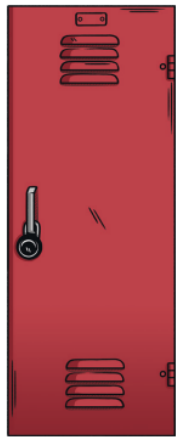
Evaluate each part to find what was used to break into Roger's locker.

Evaluate 5^2	Evaluate 4^3	Evaluate $\sqrt{16}$
Evaluate $\sqrt{121}$	Evaluate $3^3 + 2^5$	Evaluate $(\sqrt{3})^2$

Add together all the answers.

If your answer is:

- 159 then the weapon is a bowl of strawberries and cream.
- 166 then the weapon is a shoelace.
- 172 then the weapon is a tennis racket.
- 174 then the weapon is a champagne bottle.



Task 7c - Indices

Simplify each answer to find the name of the criminal.

Each box contains three statements. The criminal made three mistakes. Make sure you correct any mistakes you find!

The ball boy says:

- $a^3 \times a^7 = a^{21}$
- $b^7 \div b^3 = b^4$
- $(c^3)^2 = c^6$

The umpire says:

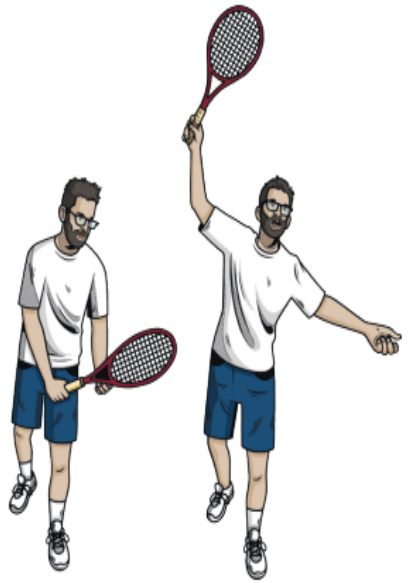
- $4a^3 \times 2a^5 = 6a^8$
- $10b^5 \div 2b^{-4} = 5b^9$
- $(2c^5)^2 = 4c^{10}$

The ball girl says:

- $a^5 \times a^9 = a^{13}$
- $b^4 \div b^{-2} = b^2$
- $(c^5)^4 = c^{20}$

The line judge says:

- $5a^4 \times 3a^6 = 8a^{24}$
- $12b^4 \div 4b^{-4} = 3$
- $(2c^4)^3 = 6c^7$



Task 8 - Number

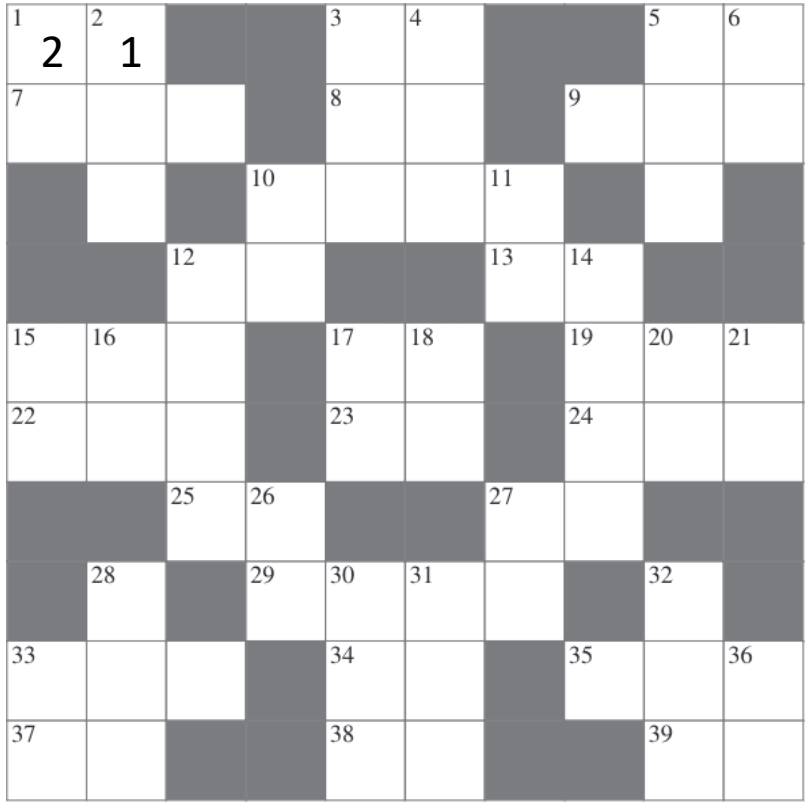
Have a go at this cross number

Across

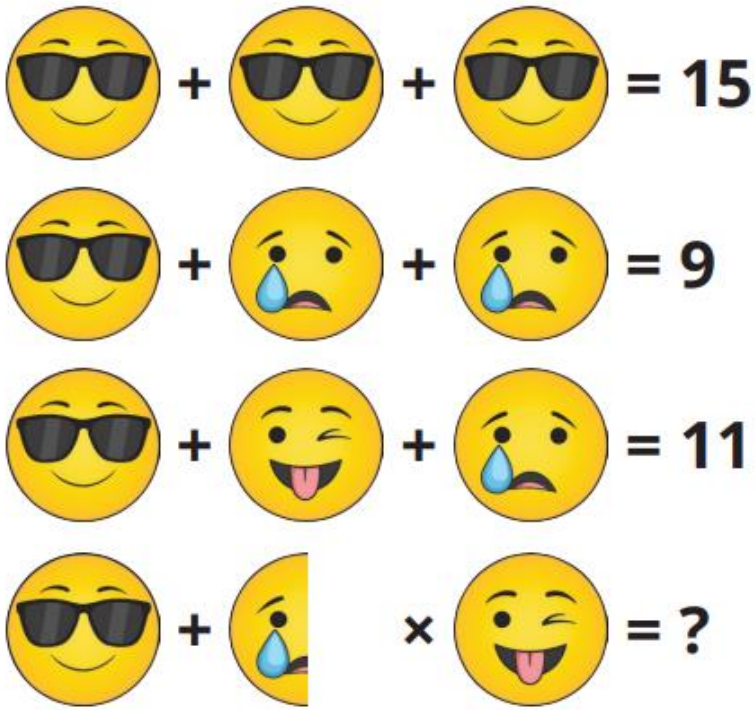
1. The number of spots on a standard dice (2)
3. The largest two-digit multiple of 13 (2)
5. One more than 8 Across (2)
7. One quarter of the square of 6 Down (3)
8. $2 \times 2 \times 2 \times 2 \times 2$ (2)
9. A cube number (3)
10. 15 Across + 3 Down + 6 Down + 21 Down + 36 Down (4)
12. 39 Across − 33 Down (2)
13. Twice (1 Across + 1 Down) (2)
15. 1 Down × 38 Across (3)
17. 36 Down − 8 Across (2)
19. A square number (3)
22. The smallest three-digit square number with all its digits different (3)
23. 1 Across + 6 Down (2)
24. A multiple of 4 Down (3)
25. 27 Across + 37 Across (2)
27. 39 Across + 1 Down (2)
29. 200 × 12 Across + 27 Down (4)
33. 10 times 2 dozen (3)
34. A square of a square number (2)
35. 5 × 1 Across + one-seventh of 12 Across (3)
37. A half of 8 Across (2)
38. A cube number (2)
39. One less than 6 Down (2)

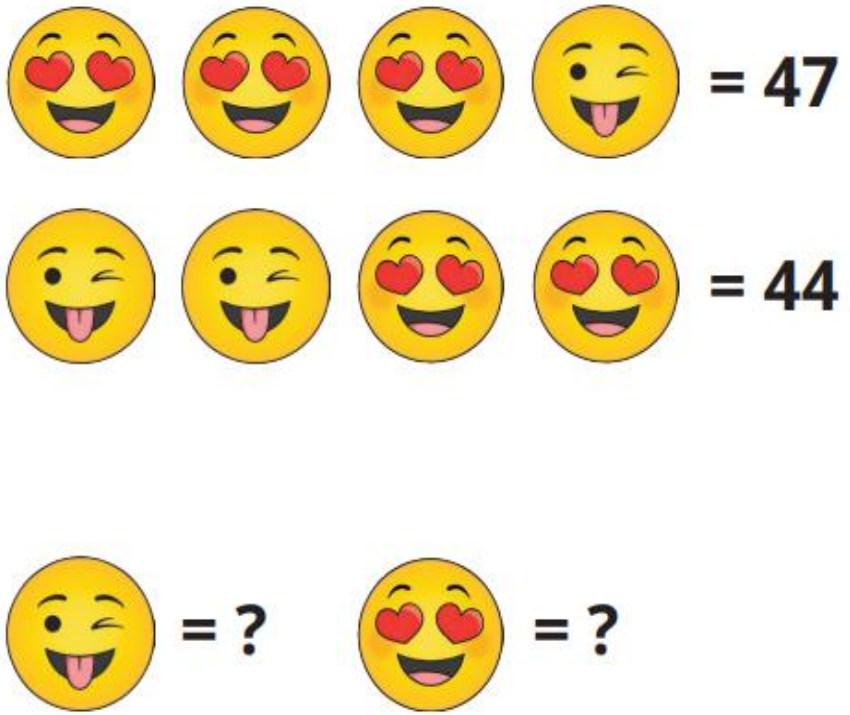
Down

1. A prime number (2)
2. The sum of the first ten prime numbers (3)
3. The number of hours in 39 days (3)
4. $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$ (3)
5. 22 Across + 28 Down (3)
6. The number of minutes in three-fifths of an hour (2)
10. A multiple of 7 (2)
11. 3 × 37 Across (2)
12. (22 Across − 6 Down) × 9 (4)
14. A number all of whose digits are the same (4)
15. A prime number (2)
16. 27 Across − 8 Across (2)
17. A multiple of 9 (2)
18. A prime number (2)
20. A square number (2)
21. The square of a square number (2)
26. 3 × 12 Across (2)
27. Two-thirds of 36 Down (2)
28. 22 Across − 1 Down (3)
30. 1 Across × 26 Down (3)
31. 25 Across + 4 Down + 5 Down (3)
32. 17 Down + 27 Across (3)
33. The sum of the digits of 1 Down, 17 Across and 17 Down (2)
36. One and a half times 27 Down (2)



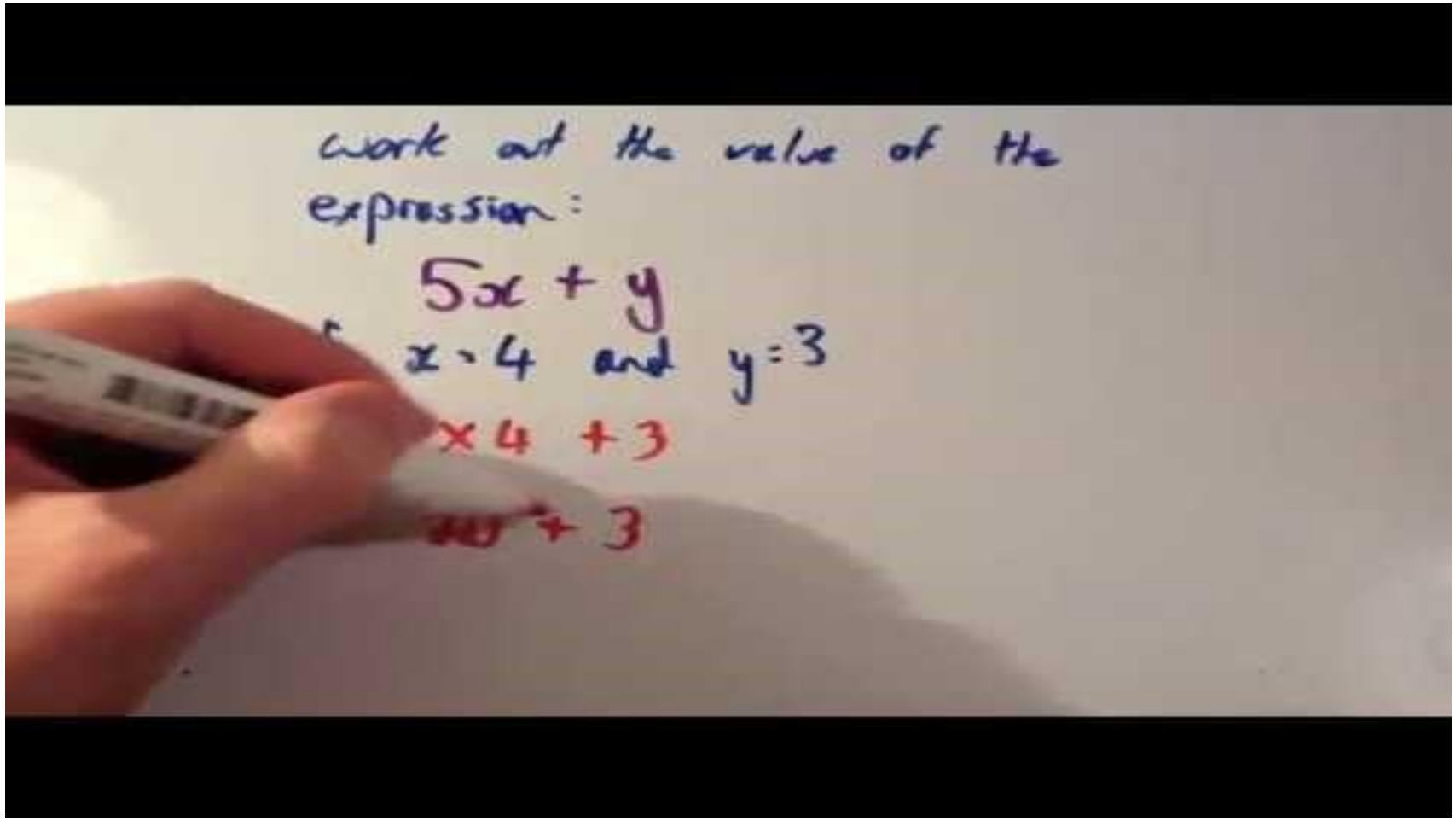
Task 9a – Algebra Problem Solving





Hint: start at the top

Task 9b – Algebra Substitution – Watch the video



https://corbettmaths.com/2012/08/20/substitution-into-expressions/

Task 9c – Algebra Substitution

Substitute the values $a = -1$, $b = -3$, $c = 5$ and $d = 0.5$ into each expression. Colour the segment by finding your answer in the key.

Light Blue	5
Yellow	9
Brown	2
Light Green	-1
Dark Green	4