Paper 2 MIB

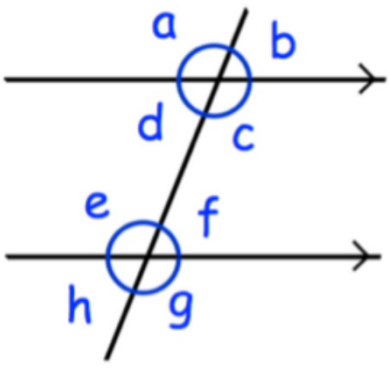
Topic	Question	Video
Angles in Parallel lines	7	G7
Subject of a formula	10b	A9a or A9b
Percentage Change/Profit	15a	R6
Reverse Percentages	15b	R12
Forming & Solving Equations	20	A16

- Watch video on Paper (using QR code)
- Watch the video on website if still unsure, answering questions at end of video
- Answer these questions

This is the best way to revise!

Total of 16 marks on one paper

Angles in Parallel lines (Q7)



(a) Which angle is corresponding to angle c? g

(b) Which angle is alternate to angle d? f

(c) Which angle is corresponding to angle h? d

(d) Which angle is vertically opposite to angle a? c

(e) Which angle is alternate to angle e? c

(f) Which angle is co-interior with angle c? f

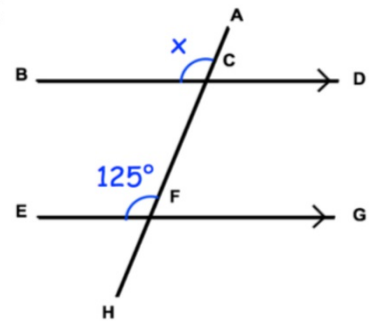
(g) Which angle is vertically opposite to angle h? f

(h) Which angle is co-interior with angle e? d

(i) Which angle is corresponding to angle a? e

(j) Which angle is vertically opposite to angle g? e

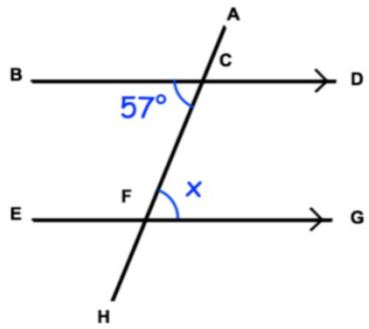
(a)



x = 125°

because corresponding angles are equal (it corresponds to angle EFC)

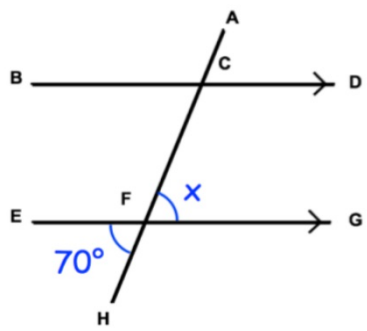
(b)



x = 57°

because alternate angles are equal (it's alternate to angle CFG)

(c)



x = 70°

because vertically opposite angles are equal (it's vertically oppposite CFG)

Subject of a Formula (Q10b)

minimally different questions

Rearrange so that "x" is the subject

a. $x + 2 = y$

$x = y - 2$

b. $2x = y$

$x = \frac{y}{2}$

c. $2x + 1 = y$

$x = \frac{y - 1}{2}$

d. $2x - 1 = y$

$x = \frac{y + 1}{2}$

e. $2(x + 1) = y$

$2x + 2 = y$

$$x = \frac{y - 2}{2}$$

f. $2(x - 1) = 2y$

$2x - 2 = 2y$

$$x = \frac{2y + 2}{2}$$

g. $2(2x - 1) = 2y$

$4x - 2 = 2y$

$$x = \frac{2y + 2}{4}$$

h. $2(2x + 1) = 2y + 1$

$4x + 2 = 2y + 1$

$$x = \frac{2y - 1}{4}$$

i. $x^2 = y$

$x = \sqrt{y}$

j. $x^2 + 3 = y$

$x = \sqrt{y - 3}$

k. $x^2 - 3 = y$

$x = \sqrt{y + 3}$

l. $(x + 3)^2 = y$

$x = \sqrt{y} - 3$

1. I buy a box of 50 red pens for £3.
   I sell every one for 10p.
   What is my percentage profit?

$50 \times 10 = 500p = £5$

$£5 - £3 = £2$

$\frac{2}{3} \times 100 = 66.\dot{6}\%$

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2. Tom buys a pack of 20 cans of coke for £10.
   He sells each one for 60p each.
   What is his percentage profit?

$20 \times 60 = 1200p = £12$

$£12 - £10 = £2$

$\frac{2}{10} \times 100 = 20\%$

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3. David buys a 6 pack of lucozade for £3.
   He sells each one for 90p.
   What is his percentage profit?

$6 \times 90 = 540p = £5.40$

$£5.40 - £3 = £2.40$

$\frac{2.40}{3} \times 100 = 80\%$

4. Mr Neill buys a box of black pens for £8.
   There are 200 pens in each box.
   160 of them are sold for 10p each. The other 40 go missing.
   What percentage profit/loss has he made?

$160 \times 10 = 1600p = £16$

$£16 - £8 = £8$

$\frac{8}{8} \times 100 = 100\%$

5. Mr Roberts buys 30 calculators for £5.50 each.
   He sells half of them for £8 each.
   He sells 10 of them for £6.
   The rest are stolen!
   What percentage profit/loss has he made?

$30 \times £5.50 = £165$

$15 \times £8 = £120$

$10 \times £6 = £60$

$£120 + £60 = £180$

$£180 - £165 = £15$

$\frac{15}{165} \times 100 = 9.0\dot{9}\%$

Reverse Percentages (Q15b)

1. 20% of all the children in a class are left handed.
   4 children are left handed.
   How many children are there in the class altogether?

20% = 4
100% = 20

= 20

2. 30% of the members of a tennis club are pensioners.
   36 members are pensioners.

   (a) How many members are there in total? 120
   (b) How many members are not pensioners?

30% = 36
10% = 12
100% = 120

70% = 84

3. A chair is on sale at a price of £20.80
   This is a 20% reduction of the normal price.
   What was the price of the chair before the reduction?

100% - 20% = 80%

80% = £20.80
10% = £2.60
100% = £26

= £26

4. Sinead buys a watch.
   20% VAT is added to the price of the watch.
   Sinead then has to pay a total of £60
   What is the price of the watch with no VAT added?

100% + 20% = 120%

120% = £60
10% = £5
100% = £50

5. Mr Roberts buys new football boots in a sale.

The sale sign said 30% off.

He paid £49 for them.

How much were they originally?

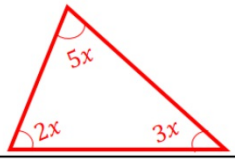
100% - 30% = 70%

70% = £49

10% = £7

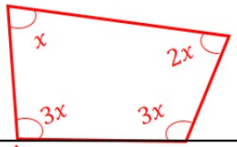
100% = £70

Forming and Solving Equations (Q20)

1. 

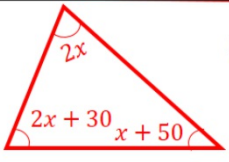
10x = 180

x = 18

2. 

9x = 360

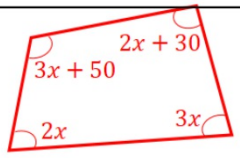
x = 40

3. 

5x + 80 = 180

5x = 100

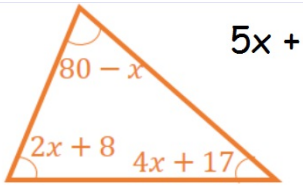
x = 20

4. 

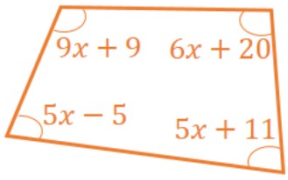
10x + 80 = 280

10x = 200

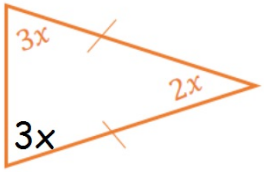
x = 20

5. 

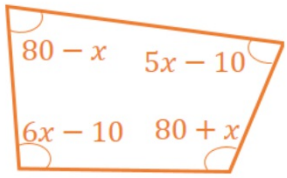
5x + 105 = 180
5x = 75
x = 15

6. 

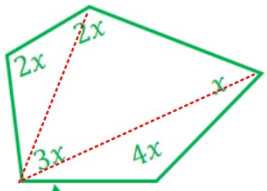
25x + 35 = 360
25x = 325
x = 13

7. 

8x = 180
x = 22.5

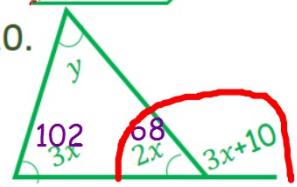
8. 

11x + 140 = 360
11x = 220
x = 20

9. 

3 triangles = 3 x 180 = 540 (for sum of interior angles)

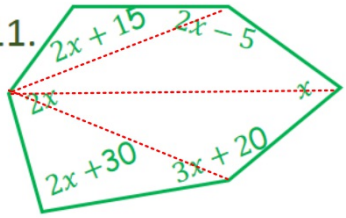
12x = 540
x = 45

10. 

Using straight line
5x + 10 = 180
5x = 170
x = 34

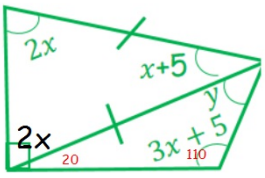
If x = 34...
3x = 102
2x = 68

y = 10

11. 

4 triangles = 4 x 180 = 720 (for sum of interior angles)

12x + 60 = 720
12x = 660
= 55

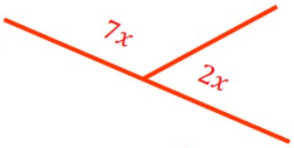
12. 

5x + 5 = 180 (Using the isosceles triangle)
5x = 175
x = 35

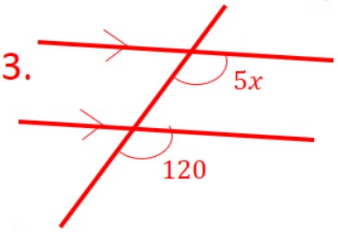
y = 50

1. 

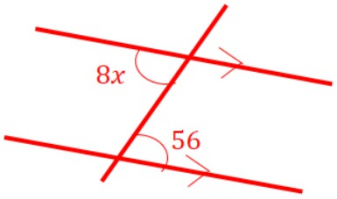
5x = 55
x = 11

2. 

9x = 180
x = 20

3. 

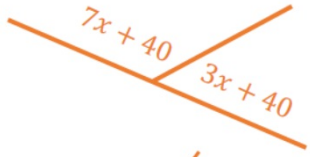
5x = 120
x = 24

4. 

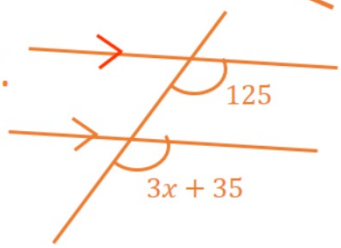
8x = 56
x = 7

5. 

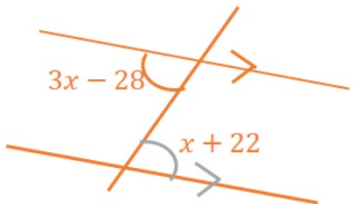
7x - 30 = 117
7x = 147
x = 21

6. 

10x + 80 = 180
10x = 100
x = 10

7. 

3x + 35 = 125
3x = 90
x = 30

8. 

3x - 28 = x + 22
2x - 28 = 22
2x = 50
x = 25