AQA GCSE Mathematics Calculator 2023 Higher Paper 2 Revision Worksheet

Questions 3–13

3. Write down the reciprocal of $\frac{4}{7}$.

The price of a toy increases by 12.5% to £19.53
Work out the **original** price of the toy.

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4. Jess saves 2p, 5p and 10p coins. She has:

- 45 10p coins
- 8 times as many 2p coins as **10p coins**
- £17.70 in total.

Work out total value of 2p coins : total value of 5p coins. **Give your answer in its simplest form**.

5.

(a) Part of a regular polygon is shown. Assume that the polygon is an octagon.
Work out the size of an exterior angle.

(b) In fact, the polygon has more sides than an octagon. What does this mean about the size of an exterior angle? Tick one box.

- It is more than the answer to part (a)
- It is the same as the answer to part (a)
- It is less than the answer to part (a)
- It could be any of the above

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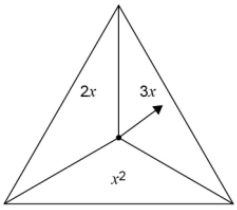
6. In a game:

- an ordinary fair six-sided dice is rolled ,the fair spinner shown is spun



The score is the dice number substituted into the spinner expression.

(a) Complete the table to show all of the possible scores.

	1	2	3	4	5	6
$2x$				8		
$3x$		6				
x^2					25	

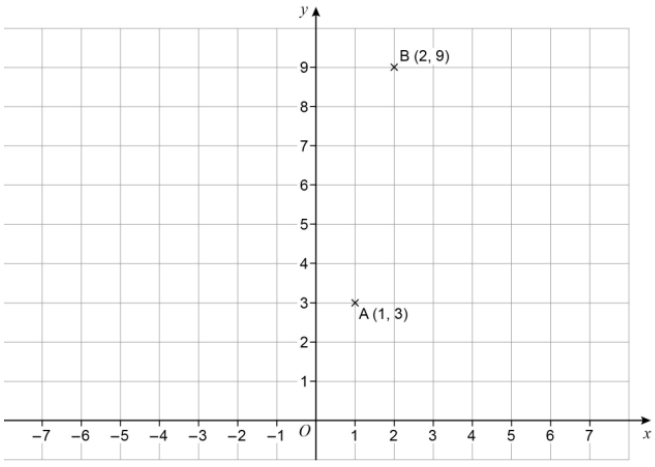
(b) A player wins the game if their score is 10 or more. **Work out the probability that they win the game.**

(c) The game is played 711 times. Estimate the number of games that are won.

8, $(a-3)x^2 + 2b \equiv 5x^2 + 12$

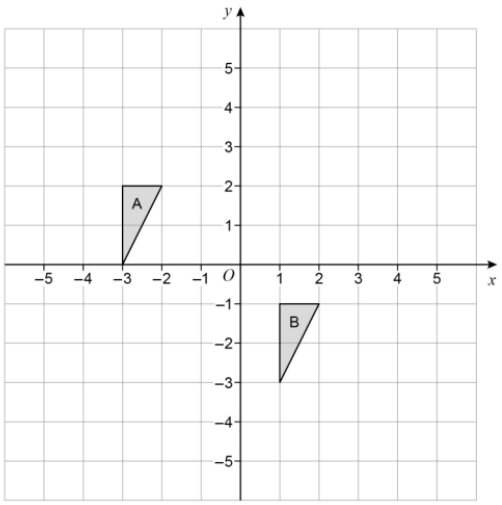
Work out the values of a and b.

9. A (1, 3) and B (2, 9) are points on a centimetre grid.

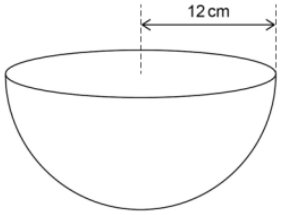


ABCD is a parallelogram. AD and BC are horizontal and each has length 5 cm The diagonals of ABCD cross at E. Work out the two possible pairs of coordinates of E.

10. Write down the translation vector that maps shape A onto shape B.



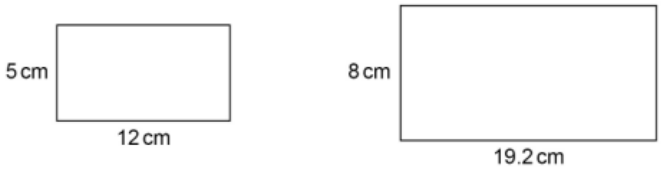
11. A bowl is a hemisphere with radius 12 cm



Water is poured into the bowl at a rate of 325 cm^3 per second for 8 seconds.
Does the water fill more than 70% of the bowl? You must show your working.

(Volume of a sphere = $\frac{4}{3}\pi r^3$)

12. Show that these two rectangles are similar.



13. A factory packs x boxes of teabags per hour. Each box contains 80 teabags. Show that the factory packs $\frac{4}{3}x$ teabags per minute.

Answer Key

3. $\frac{7}{4}$

4. £17.36

5. 8 : 9

6. (a) 45°

(b) It is less than the answer to part (a)

7. (a)

	1	2	3	4	5	6
2x	2	4	6	8	10	12
3x	3	6	9	12	15	18
x^2	1	4	9	16	25	36

(b) Probability = $\frac{7}{18}$

(c) 276 games

8. a = 8, b = 6

9. (4.5, 6) and (–1.5, 6)

10. $\begin{pmatrix} 6 \\ -4 \end{pmatrix}$

11. No, the water does not fill more than 70% of the bowl. (Calculation: Volume of hemisphere = 3629 cm^3, Water poured = 2600 cm^3, 2600/3629 ≈ 71.7%. So yes, it just fills more than 70%.)

12. The ratios of corresponding sides are equal: $\frac{5}{8} = \frac{12}{19.2} = 0.625$, so the rectangles are similar.

13. $\frac{4}{3}x$ teabags per minute: $80x$ teabags per hour, so per minute: $\frac{80x}{60} = \frac{4x}{3}$.