



# **Mark Scheme (Results)**

**Summer 2018**

**Pearson Edexcel International GCSE  
In Mathematics A (4MA1) Paper 1FR**

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Summer 2018

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme.  
Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- **Types of mark**
  - o M marks: method marks
  - o A marks: accuracy marks
  - o B marks: unconditional accuracy marks (independent of M marks)
- **Abbreviations**
  - o cao – correct answer only
  - o ft – follow through
  - o isw – ignore subsequent working
  - o SC - special case
  - o oe – or equivalent (and appropriate)
  - o dep – dependent
  - o indep – independent
  - o eeoo – each error or omission

- **No working**

If no working is shown then correct answers normally score full marks  
If no working is shown then incorrect (even though nearly correct) answers score no marks.

- **With working**

If there is a wrong answer indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

If it is clear from the working that the “correct” answer has been obtained from incorrect working, award 0 marks.

Any case of suspected misread loses A (and B) marks on that part, but can gain the M marks.

If working is crossed out and still legible, then it should be given any appropriate marks, as long as it has not been replaced by alternative work.

If there is a choice of methods shown, then no marks should be awarded, unless the answer on the answer line makes clear the method that has been used.

If there is no answer on the answer line then check the working for an obvious answer.

- **Ignoring subsequent work**

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question: eg. Incorrect cancelling of a fraction that would otherwise be correct.

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect eg algebra.

Transcription errors occur when candidates present a correct answer in working, and write it incorrectly on the answer line; mark the correct answer.

- **Parts of questions**

Unless allowed by the mark scheme, the marks allocated to one part of the question CANNOT be awarded in another.

## IGCSE Maths - Paper 1FR (1-9) 2018 June Mark scheme

| The correct answer, unless clearly, obtained by an incorrect method, should be taken to imply a correct method with the exception of Q24 |                                                 |                           |      |                                                                  |       |
|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------------------------|------|------------------------------------------------------------------|-------|
| Question                                                                                                                                 | Working                                         | Answer                    | Mark |                                                                  | Notes |
| <b>1</b>                                                                                                                                 | a                                               | African buffalo           | 1    | B1 accept buffalo or 725                                         |       |
|                                                                                                                                          | b                                               | 100                       | 1    | B1 accept (one) hundreds                                         |       |
|                                                                                                                                          | c                                               | 1192                      | 1    | B1 accept –1192                                                  |       |
|                                                                                                                                          | d                                               | $800 \times 20 \div 1000$ | 2    | M1 ft for any number in the table<br>A1                          |       |
| <b>2</b>                                                                                                                                 | $70 + 100 + 70 + 100 = 340$<br>“340” $\times 3$ | 1020                      | 3    | M1 for working out the perimeter<br>M1 dep on first M mark<br>A1 |       |
| <b>3</b>                                                                                                                                 | a                                               | $\frac{4}{15}$            | 1    | B1 Do not accept 4:15 but accept 4/15                            |       |
|                                                                                                                                          | b                                               | 4 squares shaded          | 1    | B1                                                               |       |
| <b>4</b>                                                                                                                                 | a                                               | R marked                  | 1    | B1                                                               |       |
|                                                                                                                                          | b                                               | Trapezium                 | 1    | B1                                                               |       |
|                                                                                                                                          | c                                               | 65                        | 1    | B1 accept answer in the range 63 – 67                            |       |

| Question | Working | Answer                         | Mark | Notes                                                                                                                                                                                                    |
|----------|---------|--------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>5</b> | a       | $x = -3$ drawn                 | 1    | B1 accept unlabelled                                                                                                                                                                                     |
|          | b       | $\frac{4+1}{2}, \frac{2+4}{2}$ | 2    | M1 or one coordinate correct<br>A1                                                                                                                                                                       |
|          | c       | $(2, -1)$                      | 2    | B2<br>(B1 <i>D</i> placed correctly on the grid)                                                                                                                                                         |
| <b>6</b> | a       | 64                             | 1    | B1                                                                                                                                                                                                       |
|          | b       | $20 + 8 = 28$<br>$28 \div 4$   | 2    | M1 for $+8$ or $\div 4$<br><br>A1                                                                                                                                                                        |
|          | c       | 10                             | 2    | M1 for $8 \times 5$ or 40<br>A1                                                                                                                                                                          |
| <b>7</b> | a       | 4, 7, 5, 4                     | 2    | M1 attempt to find frequencies ( at least 2 correct)<br>A1 fully correct                                                                                                                                 |
|          | b       | Completed bar chart            | 3    | M1 for 4 bars + labels on bars<br>A1 correct heights fit a completed table<br>A1 fully correct fit a completed table inc label on y axis<br>Allow different widths of bars, gaps or no gaps between bars |

| Question  | Working | Answer                 | Mark | Notes                                                                                                                          |
|-----------|---------|------------------------|------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>8</b>  | a       | $y^3$                  | 1    | B1                                                                                                                             |
|           | b       | $6cd$                  | 1    | B1                                                                                                                             |
|           | c       | $k$                    | 1    | B1 accept $1k$                                                                                                                 |
| <b>9</b>  | a       | Alto Campoo            | 1    | B1 Do not accept $-8$                                                                                                          |
|           | b       | 8                      | 1    | B1                                                                                                                             |
|           | c       | $(-7) - 1800 \div 300$ | 2    | M1 for $\pm 1800 \div 300$ or $\pm 6$<br>A1                                                                                    |
| <b>10</b> | a       | $\frac{10}{20}$        | 1    | B1 Accept $0.5, \frac{1}{2}, \frac{5}{10}, 50\%$                                                                               |
|           | b       | $\frac{3}{20}$         | 1    | B1 Accept $0.15, 15\%$                                                                                                         |
|           | c       | Adam with reason       | 3    | M1 for at least one probability<br><br>M1 for both correct probabilities<br><br>A1 Adam with $0.36$ and $0.35$ clearly seen oe |

| Question    | Working                                                                                                       | Answer | Mark | Notes                                                                                                                                    |
|-------------|---------------------------------------------------------------------------------------------------------------|--------|------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>11</b> a |                                                                                                               | 101    | 1    | B1                                                                                                                                       |
| b           | $\sqrt{1025-1}$                                                                                               | 32     | 2    | M1<br>A1                                                                                                                                 |
| <b>12</b>   | $180 - 124 = 56$<br>$56 \div 2$                                                                               | 28     | 3    | M1<br>M1<br>A1                                                                                                                           |
| <b>13</b>   | $\frac{21}{24} - \frac{4}{24}$                                                                                | Shown  | 2    | M1 for 2 correct fractions with a common denominator<br>A1 for $\frac{17}{24}$ from correct working e.g. $\frac{34}{48} = \frac{17}{24}$ |
| <b>14</b> a | $15 - 8 \times (-4)$ or $15 + 32$                                                                             | 47     | 2    | M1<br>A1                                                                                                                                 |
| b           | $18 = 4p - 24$                                                                                                | 10.5   | 2    | M1<br>A1 oe<br>M1 $\frac{18}{4} = p - 6$<br>A1 oe                                                                                        |
| <b>15</b>   | 240 m, 200 f<br>$\frac{65}{100} \times "240" (= 156)$ or $\frac{85}{100} \times "200" (= 170)$<br>$156 + 170$ | 326    | 4    | B1 for 240 and 200<br>M1 as long as their numbers add up to 440<br><br>M1 (dep M1)<br>A1<br>SC:B2 for 334                                |

| Q  | Working                                                                 | Answer | Mark | Notes                                            |
|----|-------------------------------------------------------------------------|--------|------|--------------------------------------------------|
| 16 | $20 \times 14 (= 280)$                                                  | 460    | 4    | M1                                               |
|    | $\frac{20+16}{2} \times (24-14) (= 180)$                                |        |      | M1                                               |
|    | “280” + “180”                                                           |        |      | M1 (dep) on at least one of the previous M marks |
|    |                                                                         |        |      | A1                                               |
|    |                                                                         |        |      | <b>Total 4 marks</b>                             |
|    | <b>Alternative scheme 1</b>                                             |        |      |                                                  |
|    | $(24+14) \div 2 (= 19)$ <b>and</b> $(20-16) \div 2 (=2)$                | 460    | 4    | M1                                               |
|    | $2 \times 19 (= 38)$ <b>and</b> $16 \times 24 (= 384)$                  |        |      | M1                                               |
|    | “38” + “38” + “384”                                                     |        |      | M1 (dep) on at least one of the previous M marks |
|    |                                                                         |        |      | A1                                               |
|    |                                                                         |        |      | <b>Total 4 marks</b>                             |
|    | <b>Alternative scheme 2</b>                                             |        |      |                                                  |
|    | $20 \times 24 (= 480)$                                                  | 460    | 4    | M1                                               |
|    | $(20-16) \div 2 (=2)$ <b>and</b> $24 - 14 (= 10)$<br>$2 \times 10 = 20$ |        |      | M1                                               |
|    | “480” – “20”                                                            |        |      | M1 (dep) on at least one of the previous M marks |
|    |                                                                         |        |      | A1                                               |
|    |                                                                         |        |      | <b>Total 4 marks</b>                             |

|           |     |                                      |                                            |   |                                                                                                 |
|-----------|-----|--------------------------------------|--------------------------------------------|---|-------------------------------------------------------------------------------------------------|
| <b>17</b> | (a) |                                      | Correct <b>R</b><br>(5,6), (3,6), (3,5)    | 2 | B2 fully correct<br>If not B2 then B1 for correct orientation of <b>R</b> but in wrong position |
|           | (b) |                                      | Correct <b>T</b><br>(2,-1), (2,-3), (1,-3) | 1 | B1                                                                                              |
|           | (c) | Enlargement                          | Correct description                        | 2 | M1 for enlargement oe                                                                           |
|           |     | Scale factor 3 and centre the origin |                                            |   | A1 allow SF (=) 3, allow O                                                                      |
|           |     |                                      |                                            |   | NB Award 0 marks if more than transformation                                                    |
|           |     |                                      |                                            |   | <b>Total 5 marks</b>                                                                            |

|           |                                                                                                                              |     |   |                                                                                                                                                                                                                                                                                                    |
|-----------|------------------------------------------------------------------------------------------------------------------------------|-----|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>18</b> | $1 \times 5 + 3 \times 9 + 5 \times 24 + 7 \times 40 + 9 \times 7 (= 495)$<br><b>or</b><br>$5 + 27 + 120 + 280 + 63 (= 495)$ | 5.8 | 4 | M2 for at least 4 correct products added (need not be evaluated)<br>If not M2 then award<br>M1 for consistent use of value within interval (including end points) for at least 4 products which must be added<br><b>OR</b><br>correct mid-points <b>used</b> for at least 4 products and not added |
|           | "495" $\div$ 85                                                                                                              |     |   | M1 dep on at least M1<br>Allow division by their $\sum f$<br>provided addition or total under column seen                                                                                                                                                                                          |
|           |                                                                                                                              |     |   | A1 for 5.8 – 5.824                                                                                                                                                                                                                                                                                 |
|           |                                                                                                                              |     |   | <b>Total 4 marks</b>                                                                                                                                                                                                                                                                               |

|           |                                     |     |   |                      |                                |
|-----------|-------------------------------------|-----|---|----------------------|--------------------------------|
| <b>19</b> | $675 \div (5 + 4) \times 5 (= 375)$ | 225 | 3 | M1                   | M2 $675 \div (5 + 4) \times 3$ |
|           | "375" $\div 5 \times 3$             |     |   | M1 dep<br>M1         |                                |
|           |                                     |     |   | A1                   |                                |
|           |                                     |     |   | <b>Total 3 marks</b> |                                |

|           |              |             |   |                      |                                                           |
|-----------|--------------|-------------|---|----------------------|-----------------------------------------------------------|
| <b>20</b> | For example, | No + reason | 2 | M1                   | for evaluating $E$ correctly for any value of $n$         |
|           | $n$          | $E$         |   |                      |                                                           |
|           | 1            | 7           |   |                      |                                                           |
|           | 2            | 11          |   |                      |                                                           |
|           | 3            | 17          |   |                      |                                                           |
|           | 4            | 25          |   |                      |                                                           |
|           | 5            | 35          |   |                      |                                                           |
|           |              |             |   | A1                   | for No with $E$ evaluated correctly as a non-prime number |
|           |              |             |   | <b>Total 2 marks</b> |                                                           |

|           |                                                                                   |    |   |                                                 |
|-----------|-----------------------------------------------------------------------------------|----|---|-------------------------------------------------|
| <b>21</b> | Angle $EBG = 180 - 2 \times 65 (= 50)$ or<br>Angle $ABE = 180 - (38 + 65) (= 77)$ | 27 | 3 | M1                                              |
|           | Angle $ABE = 180 - (38 + 65) (= 77)$ <b>and</b><br>Angle $ABG = "77" - "50"$      |    |   | M1 for a complete method to find<br>angle $ABG$ |
|           |                                                                                   |    |   | A1                                              |
|           |                                                                                   |    |   | <b>Total 3 marks</b>                            |
|           | <b>Alternative scheme 1</b>                                                       |    |   |                                                 |
|           | Angle $EBG = 180 - 2 \times 65 (= 50)$ or<br>Angle $EBC = 103$                    | 27 | 3 | M1                                              |
|           | Angle $EBC = 103$ <b>and</b><br>Angle $ABG = 180 - (103 + "50")$                  |    |   | M1 for a complete method to find<br>angle $ABG$ |
|           |                                                                                   |    |   | A1                                              |
|           |                                                                                   |    |   | <b>Total 3 marks</b>                            |

|           |     |  |          |   |                                                                             |
|-----------|-----|--|----------|---|-----------------------------------------------------------------------------|
| <b>22</b> | (a) |  | $4n + 2$ | 2 | M1 for $4n + k$ ( $k$ may be 0 or absent) oe                                |
|           |     |  |          |   | A1 oe<br>e.g $6 + (n - 1)4$                                                 |
|           | (b) |  | $4n + 6$ | 1 | B1 oe ft part (a) providing M1 in part (a) is awarded<br>e.g $4(n + 1) + 2$ |
|           |     |  |          |   | <b>Total 3 marks</b>                                                        |

|           |     |  |                    |   |                      |
|-----------|-----|--|--------------------|---|----------------------|
| <b>23</b> | (a) |  | $1.39 \times 10^6$ | 1 | B1                   |
|           | (b) |  | $5 \times 10^{-3}$ | 1 | B1                   |
|           |     |  |                    |   | <b>Total 2 marks</b> |

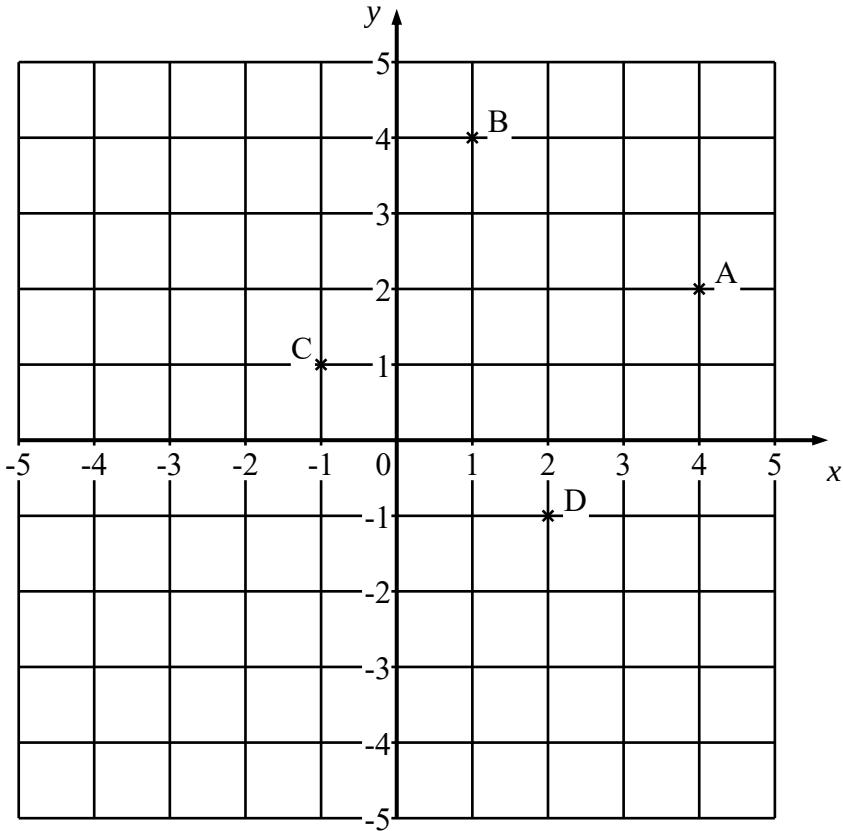
|           |                                                                        |                    |   |                      |                                                                  |
|-----------|------------------------------------------------------------------------|--------------------|---|----------------------|------------------------------------------------------------------|
| <b>24</b> | $2.5 - 0.6 = 1.9$                                                      | 2 hours 51 minutes | 4 | M1                   |                                                                  |
|           | $3 \times 12 \times "1.9" (= 68.4)$                                    |                    |   | M1                   | for using length $\times$ width $\times$ height to find a volume |
|           | $"68.4" \times 1000 \div 400$<br>(= 171 minutes)                       |                    |   | M1                   | for their volume $\times 1000 \div 400$                          |
|           |                                                                        |                    |   | A1                   |                                                                  |
|           |                                                                        |                    |   | <b>Total 4 marks</b> |                                                                  |
|           | <b>Alternative scheme</b>                                              |                    |   |                      |                                                                  |
|           | $250 - 60 = 190$                                                       | 2 hours 51 minutes | 4 | M1                   |                                                                  |
|           | $300 \times 1200 \times "190" (= 6.84 \times 10^7)$                    |                    |   | M1                   | for using length $\times$ width $\times$ height to find a volume |
|           | $"6.84 \times 10^7" \div 10^6 \times 1000 \div 400$<br>(= 171 minutes) |                    |   | M1                   | for their volume $\div 10^6 \times 1000 \div 400$                |
|           |                                                                        |                    |   | A1                   |                                                                  |
|           |                                                                        |                    |   | <b>Total 4 marks</b> |                                                                  |

|           |                                                        |          |   |                      |                                                                                                                |
|-----------|--------------------------------------------------------|----------|---|----------------------|----------------------------------------------------------------------------------------------------------------|
| <b>25</b> | $16x = 32$ or $32y = 144$                              | (2, 4.5) | 3 | M1                   | for a correct sequence of operations which leads to 1 equation in one unknown, allowing one arithmetical error |
|           | $3 \times '2' + 2y = 15$ or $3x + 2 \times '4.5' = 15$ |          |   | M1                   | (dep) substitute found value of one variable in one equation                                                   |
|           |                                                        |          |   | A1                   |                                                                                                                |
|           |                                                        |          |   | <b>Total 3 marks</b> |                                                                                                                |

|           |                                                                                                                            |    |   |                                                          |
|-----------|----------------------------------------------------------------------------------------------------------------------------|----|---|----------------------------------------------------------|
| <b>26</b> | $72 \times 1000 (= 72000)$ or $72 \div 60 (= 1.2)$ or<br>$72 \div 60 \div 60 (= 0.02)$ or $60 \div 60 \times 1000 (= 3.6)$ | 20 | 3 | M1 for at least <b>one</b> of $\times 1000$ or $\div 60$ |
|           | $\frac{72}{60 \times 60} \times 1000$                                                                                      |    |   | M1 (dep) for a complete method                           |
|           |                                                                                                                            |    |   | A1                                                       |
|           |                                                                                                                            |    |   | <b>Total 3 marks</b>                                     |

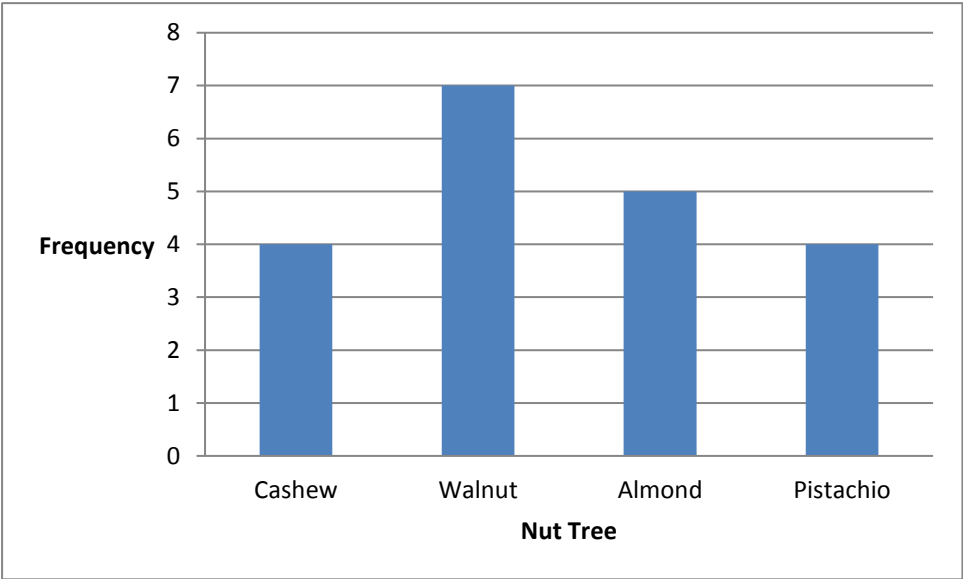
|               |                                                 |           |   |                                                     |
|---------------|-------------------------------------------------|-----------|---|-----------------------------------------------------|
| <b>27</b> (a) | $6 \times 25 + 6 \times 45 (= 150 + 270 = 420)$ | 20        | 4 | M1 for $6 \times 25 (=150)$ or $6 \times 45 (=270)$ |
|               | “150” + “270” – 350 (= 70) or “420” – 350       |           |   | M1                                                  |
|               | $\frac{70}{350} \times 100$                     |           |   | M1 (dep on M2)                                      |
|               |                                                 |           |   | A1                                                  |
|               | <b>Alternative scheme</b>                       |           |   |                                                     |
|               | $6 \times 25 + 6 \times 45 (= 150 + 270 = 420)$ | 20        | 4 | M1 for $6 \times 25 (=150)$ or $6 \times 45 (=270)$ |
|               | $\frac{420}{350} \times 100 = 120$              |           |   | M1                                                  |
|               | “120” – 100                                     |           |   | M1 (dep on M2)                                      |
|               |                                                 |           |   | A1                                                  |
| (b)           | $500\,000 \div 8 (=62\,500)$                    | 6 250 000 | 3 | M1                                                  |
|               | $500\,000 \div 8 \times 100$                    |           |   | M1 for a complete method                            |
|               |                                                 |           |   | A1                                                  |
|               |                                                 |           |   | <b>Total 7 marks</b>                                |

5

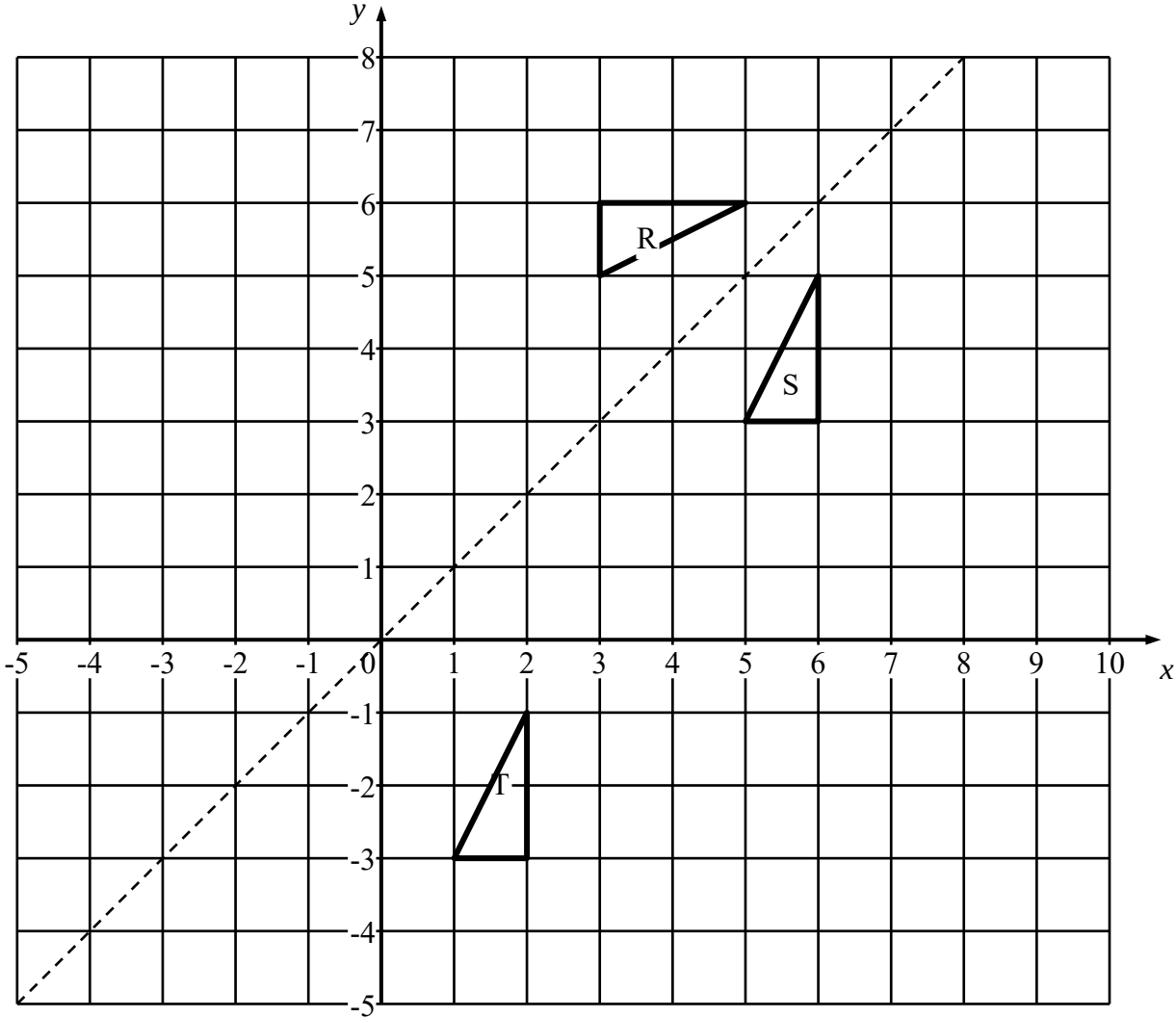


7a

| Nut tree  |  | Frequency |
|-----------|--|-----------|
| Cashew    |  | 4         |
| Walnut    |  | 7         |
| Almond    |  | 5         |
| Pistachio |  | 4         |



17



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