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| GRADE 9 | | | | |
| INVESTIGATION MEMORANDUM | | | | |
| ANGLES PAIRS ON PARALLEL LINES | | | | |
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| 1.1 | In the following five diagrams, and are two lines. The other labels refer to angles. In each diagram measure the angles marked and answer the related questions in the table below. | | |  |
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| |  |  |  |  | | --- | --- | --- | --- | | a.  **✓✓✓✓** | b.  **✓✓✓✓** | c.  **✓✓✓✓** |  | | d.  **✓✓✓✓** | e. **✓✓✓✓** |  | | | | | |
|  |  |  | | **[20]** |
| 1.2 | Complete the table. | | |  |
|  | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Diagram | Are the lines  and parallel? | Are the corresponding angles and equal? | Are the alternate angles and equal? | Are the co-interior angles and equal? If not, are they supplementary? | | | Equal | Supplementary | | a | Yes | Yes**✓** | Yes | Yes**✓** | **✓✓** | | b | No | No**✓** | No | No**✓** | **✓✓** | | c | Yes | Yes**✓** | Yes | Yes**✓** | **✓✓** | | d | Yes | Yes**✓** | Yes | Yes**✓** | **✓✓** | | e | No | No**✓** | No | No**✓** | **✓✓** | | | |  |
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|  | **[20]** |
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| 1.3 | From the investigation you should have discovered some important facts about special angles pairs. | | |  |
|  | |  |  |  | | --- | --- | --- | | When **parallel lines** are cut by a **transversal:** | | | | 1.3.1 | Corresponding angles | Equal**✓** | | 1.3.2 | Alternate angles | Equal**✓** | | 1.3.3 | Co-interior angles | Add up to or are supplementary**✓✓** | | 1.3.4 | Vertically opposite angles | Equal**✓** | | | |  |
|  |  |
|  | (1) |
|  | (1) |
|  | (2) |
|  | (1) |
|  |  |
|  |  |  | | **[5]** |
|  |  |  | |  |
| 1.4 | The following figures are not drawn to scale. Does each figure contain a pair of parallel lines? Give a brief reason for each answer. | | |  |
|  |  |  |  |  |
| 1.4.1 |  | 1.4.2 |  |  |
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|  | |  | | --- | | Yes | | Alternate angles are equal**✓** | |  | |  | | --- | | Yes | | Corresponding angles are equal**✓** | |  |
|  | (1) | (1) |
|  |  |  |
|  |
| 1.4.3 | |  | | --- | | No | | Alternate angles are NOT equal**✓** | | 1.4.4 | |  | | --- | | No | | Co-interior angles are NOT supplementary/ NOT add up to **✓** | |  |
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|  |  |  |
|  | (1) | (1) |
|  |  |  |
|  |  | **[4]** |
| 1.5 | Find the value of the unknown, giving a brief reason for your answer: | | |  |
|  |  |  |  |  |
| 1.5.1 | |  |  | | --- | --- | | Statement | Reason | | **✓** | Corr. II lines**✓** | | 1.5.2 | |  |  | | --- | --- | | Statement | Reason | | **✓** | Alt , II lines**✓** | |  |
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|  |  |  |
|  |  |  |
|  | (2) | (2) |
|  |  |  |
| 1.5.3 | |  |  | | --- | --- | | Statement | Reason | | **✓** | Vert. opp. angles**✓** | | **✓** | Corr , II lines**✓** | | 1.5.4 | |  |  | | --- | --- | | Statement | Reason | | **✓** | Co-int , II lines**✓** | | **✓** |  | |  |
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|  | (4) | (3) |
|  |  |  | **[11]** |
|  |  |  |  |  |
|  |  |  | **TOTAL:** | **60** |

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| RUBRIC |
| 1.1 Measurement of angles   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  | | Diagram | 1 marks | 2 marks | 3 marks | 4 marks | Total marks | |  | 1 - 2 angles correctly measured | 2 - 3 angles correctly measured | 3 - 4 angles correctly measured | 4 - 5 angles correctly measured |  | |  | 1 - 2 angles correctly measured | 2 - 3 angles correctly measured | 3 - 4 angles correctly measured | 4 - 5 angles correctly measured |  | |  | 1 - 2 angles correctly measured | 2 - 3 angles correctly measured | 3 - 4 angles correctly measured | 4 - 5 angles correctly measured |  | |  | 1 - 2 angles correctly measured | 2 - 3 angles correctly measured | 3 - 4 angles correctly measured | 4 - 5 angles correctly measured |  | |  | 1 - 2 angles correctly measured | 2 - 3 angles correctly measured | 3 - 4 angles correctly measured | 4 - 5 angles correctly measured |  | |  |  |  |  | Total Marks |  | |