**Year 7 – Number Theory QQQ**   
(Calculator permitted)

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| --- | --- | --- |
| 1 | Simplify  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| 2 | £45 is split in the ratio 4:5. What is the larger share?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| 3 | The ratio of red to yellow beads on a necklace is 4:7. If there are 24 red beads, how many yellow beads are there?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |
| 4 | The ratio of distance travelled by three wise men (Man A, Man B and Man C) is 4:7:3. If Wise Man B travelled 15km further than Man A, what did Man B and Man C walk combined? |  |
| 5 | A map scale is 1 : 20 000. On the map, two points are 4.1cm away from each other. How far apart is that in real life? Give your answer in km. |  |
| 6 | On a radar, two boats appear 4cm away from each other, when in fact they are 80km away from each other. What is the ‘map scale’ of the radar? |  |
| 7 | The ratio of cats to dogs in a pet shop is 5:7 and the ratio of dogs to mice also 5:7. What is the ratio of cats to mice? |  |
|  | The ratio of concentrate to water in a drink is 1:3. I drink a quarter of the glass of drink (which is initially full) then top up with water. What is the ratio of concentrate to water now?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |

Score: \_\_\_\_\_\_ / 9 Award \_\_\_\_\_\_\_\_\_\_\_\_\_  
5+ Bronze, 6+ Silver, 7+ Gold, 9 Platinum

**ANSWERS**

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| 1 | Simplify  **3 : 5** |  |
| 2 | £45 is split in the ratio 4:5. What is the larger share?  **£25** |  |
| 3 | The ratio of red to yellow beads on a necklace is 4:7. If there are 24 red beads, how many yellow beads are there?  **42** |  |
| 4 | The ratio of distance travelled by three wise men (Man A, Man B and Man C) is 4:7:3. If Wise Man B travelled 15km further than Man A, what did Man B and Man C walk combined?  **50km** |  |
| 5 | A map scale is 1 : 20 000. On the map, two points are 4.1cm away from each other. How far apart is that in real life? Give your answer in km.  **0.82 km** |  |
| 6 | On a radar, two boats appear 4cm away from each other, when in fact they are 80km away from each other. What is the ‘map scale’ of the radar?  **1 : 2 000 000 (accept 2 000 000 : 1)** |  |
| 7 | The ratio of cats to dogs in a pet shop is 5:7 and the ratio of dogs to mice also 5:7. What is the ratio of cats to mice?  **25 : 49** |  |
|  | The ratio of concentrate to water in a drink is 1:3. I drink a quarter of the glass of drink (which is initially full) then top up with water. What is the ratio of concentrate to water now?  **Suppose initial quantities of concentrate and water were 4 litres and 12 litres.**  **After drinking a quarter we’d have 3 litres and 9 litres.**  **Filling up the glass to full (16 litre capacity) we have 3 litres and 13 litres.**  **Thus new ratio is 3 : 13.** |  |