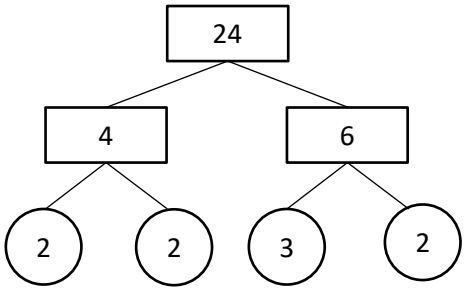
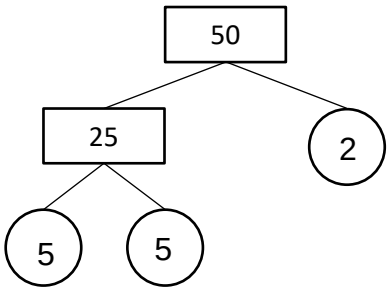
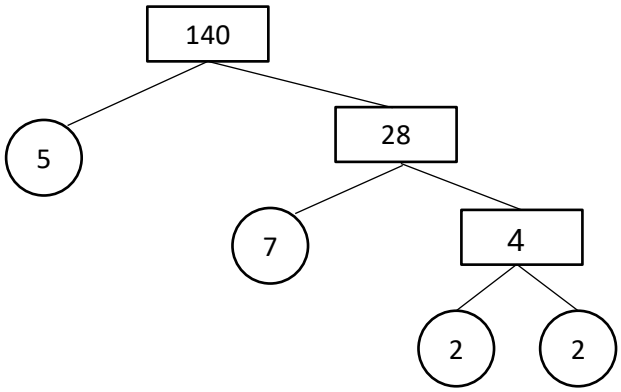
| Prime Factors, HCF, and LCM Mark Scheme | | |
|---|---|---|
| **1(a)** | $5, 7, 29, 17, 2, 3$ | [1] All six primes (in any order) |
| **1(b)** | A number that can only be divided by itself and 1 | [1] Any equivalent definition |
| **2(a)** |  | [2] All correct prime factors<br>(-1 mark per incorrect factor) |
| **2(b)** |  | [2] All correct prime factors<br>(-1 mark per incorrect factor) |
| **2(c)** |  | [2] All correct prime factors<br>(-1 mark per incorrect factor) |
| **3(a)** | $72 = 2 \times 2 \times 2 \times 3 \times 3$ | [1] Correct value for $a$ |
| | $72 = 2^3 \times 3^2$, so $a = 3,\ b = 2$ | [1] Correct value for $b$ |
| **3(b)** | $90 = 2 \times 3 \times 3 \times 5$ | [1] Calculation |
| | $90 = 2 \times 3^2 \times 5$ | [1] Final answer |
| **3(c)** | $160 = 2 \times 2 \times 2 \times 2 \times 2 \times 5$ | [1] Calculation |
| | $160 = 2^5 \times 5$ | [1] Final answer |



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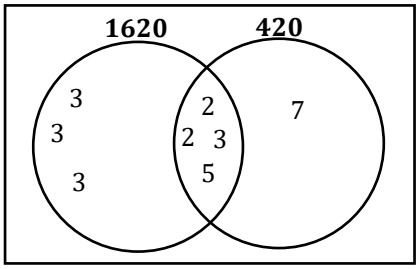
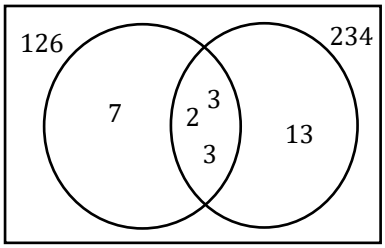
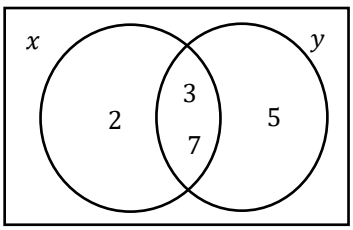
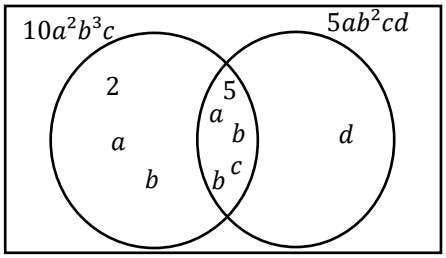
| | | |
|---|---|---|
| **4(a)** | $1620 = 2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 5$ | [1] Calculation |
| | $1620 = 2^2 \times 3^4 \times 5$ | [1] Final answer |
| **4(b)** | $420 = 2 \times 2 \times 3 \times 5 \times 7$ | [1] Calculation |
| | $420 = 2^2 \times 3 \times 5 \times 7$ | [1] Final answer |
| **4(c)** |  | [2] All correct prime factors<br>($-1$ mark per incorrect factor) |
| **4(d)** | $60$ | [1] Correct HCF |
| **4(e)** | $21$ | [1] Correct LCM |
| **5** | $126 = 2 \times 3 \times 3 \times 7 = 2 \times 3^2 \times 7$<br>$234 = 2 \times 3 \times 3 \times 13 = 2 \times 3^2 \times 13$ | [1] Correct factors |
| |  | [1] All correct prime factors |
| | $\text{HCF} = 2 \times 3 \times 3 = 18$<br>$\text{LCM} = 2 \times 3 \times 3 \times 7 \times 13 = 1638$ | [1] Correct answers |
| **6** |  | [1] Venn diagram (2 and 5 can be other way around) |
| | $x = 2 \times 3 \times 7 = 42$<br>$y = 3 \times 7 \times 5 = 105$ | [2] For 42 and 105 (either way around) |
| **7** |  | [1] Venn diagram |
| | HCF $= 5 \times a \times b \times b \times c = 5ab^2c$ | [1] Correct answer |
| | LCM $= 2 \times a \times b \times 5 \times a \times b \times b \times c \times d$<br>$= 10a^2b^3cd$ | [1] Correct answer |

END

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