## 1.19 Essential number sense practices (part 7)

1. List all numbers between 200 and 800 that have a remainder of 3 whether you divide them by 28 or 42.

2. Let $n$ be the largest integer that is the product of exactly 3 distinct prime numbers, $d$, $e$ and $10d + e$, where $d$ and $e$ are single digits. What is the sum of the digits of $n$?

3. What is the tens digit of $7^{2010}$?

4. What is the sum of the factors of 1440? What is the sum of the even factors of 1440?

5. In how many consecutive zeroes does 2010! end?

## 1.24 Essential number sense practices (part 9)

1. What is the sum of the odd positive divisors of $(6^3 + 6^3 + 6^3 + 6^3 + 6^3 + 6^3) \cdot 10!$.

2. When General Han counts the soldiers in his army, he uses the following method. He orders them to line up in rows of 11, then in rows of 13, and finally in rows of 17, and each time he counts the number of soldiers not in a row. One morning, he finds that there are 3 soldiers left when the rest are in rows of 11, 4 soldiers left when the rest are in rows of 13, and 9 soldiers left when the rest are in rows of 17. He knows that there are 1000 soldiers in his army. How many of the soldiers are present this morning?

3. The 9-digit number 987a56b91 is a multiple of 99 for some pair of digits $a$ and $b$. What is $ab$?

4. The units digit of a three-digit number is 6. What is the probability that the number is divisible by 6? Express your answer as a common fraction.

5. What is the smallest value of $n$ for which $n!$ ends in 50 consecutive zeros?