1 (a)

$$\begin{aligned} 224 &= 2 \times 2 \times 2 \times 2 \times 2 \times 7 = 2^5 \times 7, \\ 506 &= 2 \times 11 \times 23, \\ 318 &= 2 \times 3 \times 53, \\ 567 &= 3 \times 3 \times 3 \times 3 \times 7 = 3^4 \times 7, \\ 495 &= 3 \times 3 \times 5 \times 11 = 3^2 \times 5 \times 11. \end{aligned}$$

(b) The divisors of 224 are 1,2,4,8,16,32,7,14,28,56,112,224.
The divisors of 506 are 1,2,11,23,22,46,253,506.
The divisors of 318 are 1,2,3,53,6,106,159,318.
The divisors of 567 are 1,3,9,27,81,7,21,63,189,567.
The divisors of 495 are 1,3,5,11,9,15,33,55,45,99,165,495.

3.

$$\begin{aligned} \mathrm{SGD}(472, 192) &= 8, \\ \mathrm{SGD}(870, 114) &= 6, \\ \mathrm{SGD}(850, 68) &= 34, \\ \mathrm{SGD}(664, 106) &= 2, \\ \mathrm{SGD}(567, 495) &= 9. \end{aligned}$$

5 (ii) Here is the complete list of prime twins up to 100 :

$$\begin{aligned} \{3,5\}, \quad \{5,7\}, \quad \{11,13\}, \quad \{17,19\}, \\ \{29,31\}, \quad \{41,43\}, \quad \{59,61\}, \quad \{71,73\}. \end{aligned}$$

6 (i) No, yes, no, no.
(ii) No, no, yes, no.
(iii) Yes, yes, yes, yes.

8. 270 $(= 9 \times 5 \times 3 \times 2)$.

10 (a) $72\frac{1}{4}\ m^2$ **(b)** $60\frac{1}{16}\ m^2$.

14 (a) 1,3,3,3,2.
(b) 1,0,1,5,5.

(c) 1,4,1,1,1.
(d) 1,1,3,7,0.

16 (i) 2278, 3003, 3828.
(ii) 3441376 (= 3436131 + 2622 + 2623).
(iii) 39:e, 25:e, 49:e.

19 (ii) 8191 steps.

21 (i) 2^8 **(ii)** 3^{13} **(iii)** 4^{25}.

23. $511 = 2^9 - 1$ games.

24 (i) (b) **(ii)** (a).

26 (i) Rows 1,3,7,9,11,13,17,19.
(ii) Rows 1,5,7,11,13,17,19,23,25,29,31..
(iii) Rows 1,7,11,13,17,19,23,29.

27 (a) 11 different numbers ; LCM$(30, 110) = 330$.
(b) 9 different numbers ; LCM$(28, 63) = 252$.
(c) 14 different numbers ; LCM$(45, 210) = 630$.
(d) 10 different numbers ; LCM$(51, 170) = 510$.