

## Sort It Out

## Algebraic Division

By carrying out algebraic division, sort each of these divisions according to their remainder.

|           |                                        |           |                                                     |
|-----------|----------------------------------------|-----------|-----------------------------------------------------|
| <b>1</b>  | $\frac{x^3 + 6x^2 + 9x + 5}{x + 1}$    | <b>2</b>  | $\frac{x^3 + 11x^2 + 36x + 36}{x + 2}$              |
| <b>3</b>  | $\frac{x^3 + 5x^2 - 19}{x + 3}$        | <b>4</b>  | $\frac{2x^3 - 17x^2 + 39x - 20}{x - 5}$             |
| <b>5</b>  | $\frac{2x^3 - 47x + 17}{x + 5}$        | <b>6</b>  | $\frac{4x^3 - 8x^2 - 9x + 19}{x - 2}$               |
| <b>7</b>  | $\frac{2x^3 - x^2 + 23x + 12}{2x + 1}$ | <b>8</b>  | $\frac{6x^3 - 13x^2 + 7x + 3}{3x + 1}$              |
| <b>9</b>  | $\frac{51 - 45x + 12x^2 - x^3}{5 - x}$ | <b>10</b> | $\frac{x^4 - 5x^3 + 8x^2 - 14x - 9}{x - 4}$         |
| <b>11</b> | $\frac{2x^4 - 23x^2 + 17x - 6}{x - 3}$ | <b>12</b> | $\frac{2x^3 + ax^2 + (3 - a^2)x + (3a + 2)}{x + a}$ |

|                    |                       |                |                    |
|--------------------|-----------------------|----------------|--------------------|
| <b>A</b>           | There is no remainder | <b>B</b>       | The remainder is 1 |
| <b>2, 4, 7, 11</b> |                       | <b>1, 6, 9</b> |                    |
| <b>C</b>           | The remainder is $-1$ | <b>D</b>       | The remainder is 2 |
| <b>3, 8, 10</b>    |                       | <b>5, 12</b>   |                    |