1. Réduction d'e*x*pressions littérales

E*x*ercice 1 8*x* + 7*x* + *x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 2*x* + 10*x* + 9*x* + *x* + 10*x* + 10*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 2*x* + 6*x* + 2*x* + 6*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 3*x* + 9*x* + 8*x* + *x* + 2*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 2*x* + 5*x* + 5*x* + 6*x* + 9*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 6*x* + 4*x* + 6*x* + 7*x* + 2*x* + 5*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 *x* + 3*x* + 9*x* + 3*x* + 9*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 2*x* + 9*x* + 6*x* + *x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 10*x* + 8*x* + 5*x* + *x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 5*x* + *x* + 2*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 3*x* + 5*x* + 4*x* + 6*x* + 10*x* + 3*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 6*x* + 9*x* + 4*x* + 6*x* + 2*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 *x* + 7*x* + 9*x* + 8*x* + 5*x* + 2*x* + 9*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 9*x* + 4*x* + 9*x* + *x* + 2*x* + 4*x* + 6*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 3*x* + 3*x* + 5*x* + 9*x* + 4*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 8*x* + 6*x* + 7*x* + 10*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 8*x* + 2*x* + 2*x* + 7*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 4*x* + 6*x* + 8*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 7*x* + 4*x* + *x* + *x* + 8*x* + 3*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 10*x* + 8*x* + 4*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 8*x* + 7*x* + *x* + 7*x* = 23*x*

Solution 2 2*x* + 10*x* + 9*x* + *x* + 10*x* + 10*x* + 9*x* = 51*x*

Solution 3 2*x* + 6*x* + 2*x* + 6*x* + 8*x* = 24*x*

Solution 4 3*x* + 9*x* + 8*x* + *x* + 2*x* + 4*x* = 27*x*

Solution 5 2*x* + 5*x* + 5*x* + 6*x* + 9*x* + 4*x* = 31*x*

Solution 6 6*x* + 4*x* + 6*x* + 7*x* + 2*x* + 5*x* + 3*x* = 33*x*

Solution 7 *x* + 3*x* + 9*x* + 3*x* + 9*x* + *x* = 26*x*

Solution 8 2*x* + 9*x* + 6*x* + *x* + 6*x* = 24*x*

Solution 9 10*x* + 8*x* + 5*x* + *x* + 10*x* = 34*x*

Solution 10 5*x* + *x* + 2*x* + 7*x* = 15*x*

Solution 11 3*x* + 5*x* + 4*x* + 6*x* + 10*x* + 3*x* + 5*x* = 36*x*

Solution 12 6*x* + 9*x* + 4*x* + 6*x* + 2*x* + 3*x* = 30*x*

Solution 13 *x* + 7*x* + 9*x* + 8*x* + 5*x* + 2*x* + 9*x* + 9*x* = 50*x*

Solution 14 9*x* + 4*x* + 9*x* + *x* + 2*x* + 4*x* + 6*x* + 3*x* = 38*x*

Solution 15 3*x* + 3*x* + 5*x* + 9*x* + 4*x* + 5*x* + 8*x* = 37*x*

Solution 16 8*x* + 6*x* + 7*x* + 10*x* + 2*x* = 33*x*

Solution 17 8*x* + 2*x* + 2*x* + 7*x* + *x* = 20*x*

Solution 18 4*x* + 6*x* + 8*x* + 4*x* = 22*x*

Solution 19 7*x* + 4*x* + *x* + *x* + 8*x* + 3*x* + 2*x* = 26*x*

Solution 20 10*x* + 8*x* + 4*x* + 10*x* = 32*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 7*x* + 6*x* + 6*x* + 3*x* + 2*x* + 6*x* + 6*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 *x* + 2*x* + 9*x* + 7*x* + 7*x* + 7*x* + *x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 *x* + 8*x* + 3*x* + *x* + 2*x* + 4*x* + 9*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 9*x* + 6*x* + 2*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 6*x* + 5*x* + 10*x* + 8*x* + 7*x* + 7*x* + 3*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 5*x* + 10*x* + 4*x* + *x* + 5*x* + 6*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 5*x* + 2*x* + 4*x* + 2*x* + 3*x* + *x* + 6*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 *x* + 9*x* + 7*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 7*x* + *x* + 9*x* + 7*x* + 7*x* + 4*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 5*x* + 5*x* + 10*x* + *x* + 9*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 7*x* + 3*x* + 8*x* + 9*x* + *x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 10*x* + 4*x* + *x* + 8*x* + 9*x* + 9*x* + 10*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 10*x* + 4*x* + 5*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 7*x* + 3*x* + 2*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 2*x* + 3*x* + 3*x* + 8*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 6*x* + 9*x* + 6*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 4*x* + 5*x* + 8*x* + 10*x* + 5*x* + 10*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 10*x* + *x* + 3*x* + 10*x* + 9*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 7*x* + 4*x* + *x* + 5*x* + 3*x* + 8*x* + 10*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 *x* + 10*x* + 6*x* + 5*x* + 2*x* + *x* + 7*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 7*x* + 6*x* + 6*x* + 3*x* + 2*x* + 6*x* + 6*x* + 10*x* = 46*x*

Solution 2 *x* + 2*x* + 9*x* + 7*x* + 7*x* + 7*x* + *x* + 8*x* = 42*x*

Solution 3 *x* + 8*x* + 3*x* + *x* + 2*x* + 4*x* + 9*x* + 6*x* = 34*x*

Solution 4 9*x* + 6*x* + 2*x* + *x* = 18*x*

Solution 5 6*x* + 5*x* + 10*x* + 8*x* + 7*x* + 7*x* + 3*x* + 2*x* = 48*x*

Solution 6 5*x* + 10*x* + 4*x* + *x* + 5*x* + 6*x* + 5*x* = 36*x*

Solution 7 5*x* + 2*x* + 4*x* + 2*x* + 3*x* + *x* + 6*x* + 7*x* = 30*x*

Solution 8 *x* + 9*x* + 7*x* + 2*x* = 19*x*

Solution 9 7*x* + *x* + 9*x* + 7*x* + 7*x* + 4*x* + 8*x* = 43*x*

Solution 10 5*x* + 5*x* + 10*x* + *x* + 9*x* + 7*x* = 37*x*

Solution 11 7*x* + 3*x* + 8*x* + 9*x* + *x* + 4*x* = 32*x*

Solution 12 10*x* + 4*x* + *x* + 8*x* + 9*x* + 9*x* + 10*x* + 4*x* = 55*x*

Solution 13 10*x* + 4*x* + 5*x* + 3*x* = 22*x*

Solution 14 7*x* + 3*x* + 2*x* + 2*x* = 14*x*

Solution 15 2*x* + 3*x* + 3*x* + 8*x* + 5*x* = 21*x*

Solution 16 6*x* + 9*x* + 6*x* + 2*x* = 23*x*

Solution 17 4*x* + 5*x* + 8*x* + 10*x* + 5*x* + 10*x* + 8*x* = 50*x*

Solution 18 10*x* + *x* + 3*x* + 10*x* + 9*x* + 8*x* = 41*x*

Solution 19 7*x* + 4*x* + *x* + 5*x* + 3*x* + 8*x* + 10*x* + 8*x* = 46*x*

Solution 20 *x* + 10*x* + 6*x* + 5*x* + 2*x* + *x* + 7*x* + 2*x* = 34*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 3*x* + 2*x* + 4*x* + 10*x* + *x* + 9*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 7*x* + 3*x* + 3*x* + 8*x* + *x* + 7*x* + 4*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 3*x* + 7*x* + 3*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 2*x* + 8*x* + 2*x* + 9*x* + *x* + 2*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 7*x* + 6*x* + 9*x* + *x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 9*x* + 6*x* + 7*x* + 5*x* + 9*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 7*x* + 2*x* + 2*x* + *x* + *x* + 8*x* + 4*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 6*x* + 10*x* + 9*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 10*x* + 2*x* + 4*x* + 4*x* + 10*x* + 8*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 3*x* + 2*x* + 7*x* + 2*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 6*x* + 6*x* + 4*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 3*x* + 2*x* + 4*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 8*x* + 8*x* + 3*x* + 5*x* + 3*x* + 3*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 5*x* + 2*x* + *x* + 5*x* + 4*x* + 10*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 4*x* + 10*x* + 8*x* + 9*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 10*x* + 4*x* + 4*x* + 7*x* + 4*x* + *x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 10*x* + 2*x* + 6*x* + *x* + 10*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 9*x* + 10*x* + 7*x* + 6*x* + 3*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 4*x* + 4*x* + 9*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 8*x* + 2*x* + 10*x* + 2*x* + 4*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 3*x* + 2*x* + 4*x* + 10*x* + *x* + 9*x* + 4*x* = 33*x*

Solution 2 7*x* + 3*x* + 3*x* + 8*x* + *x* + 7*x* + 4*x* + 5*x* = 38*x*

Solution 3 3*x* + 7*x* + 3*x* + 8*x* = 21*x*

Solution 4 2*x* + 8*x* + 2*x* + 9*x* + *x* + 2*x* + 2*x* = 26*x*

Solution 5 7*x* + 6*x* + 9*x* + *x* + 8*x* = 31*x*

Solution 6 9*x* + 6*x* + 7*x* + 5*x* + 9*x* + *x* = 37*x*

Solution 7 7*x* + 2*x* + 2*x* + *x* + *x* + 8*x* + 4*x* + *x* = 26*x*

Solution 8 6*x* + 10*x* + 9*x* + 4*x* = 29*x*

Solution 9 10*x* + 2*x* + 4*x* + 4*x* + 10*x* + 8*x* + 5*x* + 8*x* = 51*x*

Solution 10 3*x* + 2*x* + 7*x* + 2*x* + 4*x* = 18*x*

Solution 11 6*x* + 6*x* + 4*x* + 6*x* = 22*x*

Solution 12 3*x* + 2*x* + 4*x* + 7*x* = 16*x*

Solution 13 8*x* + 8*x* + 3*x* + 5*x* + 3*x* + 3*x* + 7*x* = 37*x*

Solution 14 5*x* + 2*x* + *x* + 5*x* + 4*x* + 10*x* + 2*x* = 29*x*

Solution 15 4*x* + 10*x* + 8*x* + 9*x* + 5*x* + 8*x* = 44*x*

Solution 16 10*x* + 4*x* + 4*x* + 7*x* + 4*x* + *x* + 2*x* = 32*x*

Solution 17 10*x* + 2*x* + 6*x* + *x* + 10*x* + 4*x* = 33*x*

Solution 18 9*x* + 10*x* + 7*x* + 6*x* + 3*x* + *x* = 36*x*

Solution 19 4*x* + 4*x* + 9*x* + 7*x* = 24*x*

Solution 20 8*x* + 2*x* + 10*x* + 2*x* + 4*x* + 10*x* = 36*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 7*x* + *x* + 3*x* + 8*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 5*x* + 6*x* + 9*x* + 3*x* + 7*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 7*x* + 2*x* + 10*x* + 2*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 9*x* + 3*x* + 4*x* + 10*x* + 6*x* + 4*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 5*x* + 8*x* + 5*x* + 5*x* + 6*x* + 8*x* + 5*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 2*x* + 5*x* + 4*x* + *x* + 3*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 *x* + 7*x* + 6*x* + 2*x* + 3*x* + 5*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 5*x* + 4*x* + 3*x* + *x* + 3*x* + 3*x* + 2*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 4*x* + 4*x* + 10*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 6*x* + 7*x* + *x* + 3*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 2*x* + 5*x* + 6*x* + 8*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 *x* + 2*x* + 6*x* + 6*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 *x* + 9*x* + 5*x* + 8*x* + 8*x* + 2*x* + 7*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 8*x* + 8*x* + 5*x* + 4*x* + 5*x* + 8*x* + *x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 2*x* + 6*x* + 7*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 5*x* + 6*x* + 10*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 6*x* + 7*x* + 3*x* + 10*x* + 8*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 7*x* + 6*x* + *x* + 2*x* + 9*x* + 3*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 10*x* + 9*x* + 4*x* + 3*x* + 9*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 6*x* + 6*x* + 8*x* + 8*x* + 5*x* + 4*x* + 10*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 7*x* + *x* + 3*x* + 8*x* + 5*x* = 24*x*

Solution 2 5*x* + 6*x* + 9*x* + 3*x* + 7*x* + *x* = 31*x*

Solution 3 7*x* + 2*x* + 10*x* + 2*x* + *x* = 22*x*

Solution 4 9*x* + 3*x* + 4*x* + 10*x* + 6*x* + 4*x* + 10*x* = 46*x*

Solution 5 5*x* + 8*x* + 5*x* + 5*x* + 6*x* + 8*x* + 5*x* + 7*x* = 49*x*

Solution 6 2*x* + 5*x* + 4*x* + *x* + 3*x* + 2*x* = 17*x*

Solution 7 *x* + 7*x* + 6*x* + 2*x* + 3*x* + 5*x* + 9*x* = 33*x*

Solution 8 5*x* + 4*x* + 3*x* + *x* + 3*x* + 3*x* + 2*x* + 9*x* = 30*x*

Solution 9 4*x* + 4*x* + 10*x* + 7*x* = 25*x*

Solution 10 6*x* + 7*x* + *x* + 3*x* + 3*x* = 20*x*

Solution 11 2*x* + 5*x* + 6*x* + 8*x* + 10*x* = 31*x*

Solution 12 *x* + 2*x* + 6*x* + 6*x* + 5*x* + 8*x* = 28*x*

Solution 13 *x* + 9*x* + 5*x* + 8*x* + 8*x* + 2*x* + 7*x* + 10*x* = 50*x*

Solution 14 8*x* + 8*x* + 5*x* + 4*x* + 5*x* + 8*x* + *x* + 7*x* = 46*x*

Solution 15 2*x* + 6*x* + 7*x* + 9*x* = 24*x*

Solution 16 5*x* + 6*x* + 10*x* + 4*x* = 25*x*

Solution 17 6*x* + 7*x* + 3*x* + 10*x* + 8*x* + 6*x* = 40*x*

Solution 18 7*x* + 6*x* + *x* + 2*x* + 9*x* + 3*x* + 8*x* = 36*x*

Solution 19 10*x* + 9*x* + 4*x* + 3*x* + 9*x* + 2*x* = 37*x*

Solution 20 6*x* + 6*x* + 8*x* + 8*x* + 5*x* + 4*x* + 10*x* + 8*x* = 55*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 10*x* + 7*x* + 7*x* + 10*x* + 7*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 9*x* + 8*x* + 7*x* + *x* + 6*x* + 6*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 3*x* + 7*x* + 2*x* + 10*x* + 8*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 6*x* + 8*x* + 8*x* + 9*x* + 3*x* + 10*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 10*x* + 5*x* + 9*x* + 8*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 9*x* + 5*x* + *x* + 10*x* + 4*x* + *x* + 2*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 8*x* + *x* + 3*x* + *x* + 5*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 *x* + 3*x* + 6*x* + 5*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 4*x* + *x* + 3*x* + 10*x* + 9*x* + 5*x* + 3*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 8*x* + 10*x* + 8*x* + *x* + 8*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 5*x* + 4*x* + *x* + 3*x* + 6*x* + 8*x* + 7*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 4*x* + 8*x* + 7*x* + 10*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 4*x* + 8*x* + 2*x* + *x* + *x* + 2*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 6*x* + 7*x* + 3*x* + 5*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 5*x* + 5*x* + *x* + 3*x* + 8*x* + 6*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 10*x* + 3*x* + 8*x* + 8*x* + 8*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 10*x* + 5*x* + 6*x* + 5*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 4*x* + 9*x* + 9*x* + 10*x* + 5*x* + 9*x* + 9*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 3*x* + 8*x* + *x* + *x* + 6*x* + 8*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 3*x* + 4*x* + 10*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 10*x* + 7*x* + 7*x* + 10*x* + 7*x* + 10*x* = 51*x*

Solution 2 9*x* + 8*x* + 7*x* + *x* + 6*x* + 6*x* + 5*x* = 42*x*

Solution 3 3*x* + 7*x* + 2*x* + 10*x* + 8*x* + 10*x* = 40*x*

Solution 4 6*x* + 8*x* + 8*x* + 9*x* + 3*x* + 10*x* + 7*x* = 51*x*

Solution 5 10*x* + 5*x* + 9*x* + 8*x* + *x* = 33*x*

Solution 6 9*x* + 5*x* + *x* + 10*x* + 4*x* + *x* + 2*x* + 10*x* = 42*x*

Solution 7 8*x* + *x* + 3*x* + *x* + 5*x* + *x* = 19*x*

Solution 8 *x* + 3*x* + 6*x* + 5*x* + 5*x* = 20*x*

Solution 9 4*x* + *x* + 3*x* + 10*x* + 9*x* + 5*x* + 3*x* + 7*x* = 42*x*

Solution 10 8*x* + 10*x* + 8*x* + *x* + 8*x* + *x* = 36*x*

Solution 11 5*x* + 4*x* + *x* + 3*x* + 6*x* + 8*x* + 7*x* + 4*x* = 38*x*

Solution 12 4*x* + 8*x* + 7*x* + 10*x* + *x* = 30*x*

Solution 13 4*x* + 8*x* + 2*x* + *x* + *x* + 2*x* + *x* = 19*x*

Solution 14 6*x* + 7*x* + 3*x* + 5*x* + 7*x* = 28*x*

Solution 15 5*x* + 5*x* + *x* + 3*x* + 8*x* + 6*x* + 10*x* = 38*x*

Solution 16 10*x* + 3*x* + 8*x* + 8*x* + 8*x* + 6*x* = 43*x*

Solution 17 10*x* + 5*x* + 6*x* + 5*x* + 3*x* = 29*x*

Solution 18 4*x* + 9*x* + 9*x* + 10*x* + 5*x* + 9*x* + 9*x* + 8*x* = 63*x*

Solution 19 3*x* + 8*x* + *x* + *x* + 6*x* + 8*x* + *x* = 28*x*

Solution 20 3*x* + 4*x* + 10*x* + 8*x* = 25*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 *x* + 4*x* + 2*x* + 4*x* + 7*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 5*x* + 3*x* + 5*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 4*x* + 6*x* + 6*x* + 2*x* + 7*x* + 6*x* + 4*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 9*x* + 3*x* + 2*x* + 8*x* + 3*x* + 9*x* + 5*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 7*x* + 10*x* + 6*x* + 5*x* + 3*x* + 3*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 6*x* + 2*x* + 9*x* + 10*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 5*x* + 6*x* + *x* + 8*x* + 10*x* + 2*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 3*x* + 3*x* + 2*x* + *x* + 10*x* + 9*x* + 10*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 8*x* + 7*x* + 2*x* + 9*x* + *x* + 9*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 6*x* + 7*x* + 4*x* + 9*x* + 10*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 4*x* + 6*x* + 7*x* + 10*x* + 6*x* + 3*x* + 7*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 4*x* + 2*x* + 5*x* + 10*x* + 6*x* + *x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 2*x* + *x* + 10*x* + 9*x* + 4*x* + 10*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 10*x* + 7*x* + 8*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 10*x* + 9*x* + 3*x* + 4*x* + 8*x* + 9*x* + 9*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 5*x* + 10*x* + 2*x* + 4*x* + 5*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 8*x* + 4*x* + 3*x* + *x* + 3*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 6*x* + *x* + 5*x* + 2*x* + 9*x* + 2*x* + 6*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 5*x* + 10*x* + 6*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 2*x* + 7*x* + 5*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 *x* + 4*x* + 2*x* + 4*x* + 7*x* + 6*x* = 24*x*

Solution 2 5*x* + 3*x* + 5*x* + 6*x* = 19*x*

Solution 3 4*x* + 6*x* + 6*x* + 2*x* + 7*x* + 6*x* + 4*x* + 10*x* = 45*x*

Solution 4 9*x* + 3*x* + 2*x* + 8*x* + 3*x* + 9*x* + 5*x* + 7*x* = 46*x*

Solution 5 7*x* + 10*x* + 6*x* + 5*x* + 3*x* + 3*x* + 4*x* = 38*x*

Solution 6 6*x* + 2*x* + 9*x* + 10*x* + 10*x* = 37*x*

Solution 7 5*x* + 6*x* + *x* + 8*x* + 10*x* + 2*x* + 4*x* = 36*x*

Solution 8 3*x* + 3*x* + 2*x* + *x* + 10*x* + 9*x* + 10*x* + *x* = 39*x*

Solution 9 8*x* + 7*x* + 2*x* + 9*x* + *x* + 9*x* + 6*x* = 42*x*

Solution 10 6*x* + 7*x* + 4*x* + 9*x* + 10*x* + 2*x* = 38*x*

Solution 11 4*x* + 6*x* + 7*x* + 10*x* + 6*x* + 3*x* + 7*x* + 10*x* = 53*x*

Solution 12 4*x* + 2*x* + 5*x* + 10*x* + 6*x* + *x* + 7*x* = 35*x*

Solution 13 2*x* + *x* + 10*x* + 9*x* + 4*x* + 10*x* + 3*x* = 39*x*

Solution 14 10*x* + 7*x* + 8*x* + *x* = 26*x*

Solution 15 10*x* + 9*x* + 3*x* + 4*x* + 8*x* + 9*x* + 9*x* + 6*x* = 58*x*

Solution 16 5*x* + 10*x* + 2*x* + 4*x* + 5*x* + 5*x* + 8*x* = 39*x*

Solution 17 8*x* + 4*x* + 3*x* + *x* + 3*x* + *x* = 20*x*

Solution 18 6*x* + *x* + 5*x* + 2*x* + 9*x* + 2*x* + 6*x* + 2*x* = 33*x*

Solution 19 5*x* + 10*x* + 6*x* + 5*x* = 26*x*

Solution 20 2*x* + 7*x* + 5*x* + 3*x* = 17*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 7*x* + 8*x* + 7*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 10*x* + 10*x* + *x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 4*x* + 9*x* + 8*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 2*x* + 9*x* + 10*x* + 2*x* + 8*x* + 3*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 3*x* + 8*x* + *x* + 3*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 5*x* + 9*x* + 6*x* + 3*x* + 4*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 9*x* + 3*x* + 2*x* + 6*x* + 4*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 2*x* + 4*x* + 5*x* + 8*x* + 4*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 2*x* + 4*x* + 5*x* + 7*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 7*x* + 5*x* + 6*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 2*x* + 6*x* + 5*x* + 2*x* + 2*x* + *x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 9*x* + 6*x* + 10*x* + 3*x* + 10*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 7*x* + 2*x* + 10*x* + 9*x* + 7*x* + 10*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 4*x* + 2*x* + 9*x* + 8*x* + 4*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 6*x* + 5*x* + 4*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 8*x* + 2*x* + 9*x* + 7*x* + 10*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 6*x* + 3*x* + 10*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 10*x* + 5*x* + *x* + 3*x* + *x* + 5*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 5*x* + 4*x* + 6*x* + 9*x* + 7*x* + 7*x* + 8*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 4*x* + 2*x* + 7*x* + 3*x* + 3*x* + 3*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 7*x* + 8*x* + 7*x* + 4*x* = 26*x*

Solution 2 10*x* + 10*x* + *x* + 2*x* = 23*x*

Solution 3 4*x* + 9*x* + 8*x* + 6*x* = 27*x*

Solution 4 2*x* + 9*x* + 10*x* + 2*x* + 8*x* + 3*x* + 5*x* + 8*x* = 47*x*

Solution 5 3*x* + 8*x* + *x* + 3*x* + 5*x* = 20*x*

Solution 6 5*x* + 9*x* + 6*x* + 3*x* + 4*x* + 6*x* = 33*x*

Solution 7 9*x* + 3*x* + 2*x* + 6*x* + 4*x* + 5*x* = 29*x*

Solution 8 2*x* + 4*x* + 5*x* + 8*x* + 4*x* + 6*x* = 29*x*

Solution 9 2*x* + 4*x* + 5*x* + 7*x* + 3*x* = 21*x*

Solution 10 7*x* + 5*x* + 6*x* + 2*x* = 20*x*

Solution 11 2*x* + 6*x* + 5*x* + 2*x* + 2*x* + *x* + 5*x* = 23*x*

Solution 12 9*x* + 6*x* + 10*x* + 3*x* + 10*x* + 6*x* = 44*x*

Solution 13 7*x* + 2*x* + 10*x* + 9*x* + 7*x* + 10*x* + *x* = 46*x*

Solution 14 4*x* + 2*x* + 9*x* + 8*x* + 4*x* + 5*x* = 32*x*

Solution 15 6*x* + 5*x* + 4*x* + 10*x* = 25*x*

Solution 16 8*x* + 2*x* + 9*x* + 7*x* + 10*x* + 2*x* = 38*x*

Solution 17 6*x* + 3*x* + 10*x* + *x* = 20*x*

Solution 18 10*x* + 5*x* + *x* + 3*x* + *x* + 5*x* + 2*x* = 27*x*

Solution 19 5*x* + 4*x* + 6*x* + 9*x* + 7*x* + 7*x* + 8*x* + 7*x* = 53*x*

Solution 20 4*x* + 2*x* + 7*x* + 3*x* + 3*x* + 3*x* + 8*x* = 30*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 3*x* + 4*x* + 8*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 10*x* + 7*x* + 9*x* + 8*x* + 7*x* + 9*x* + 8*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 10*x* + 4*x* + 3*x* + 8*x* + 5*x* + 2*x* + 5*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 3*x* + 3*x* + 3*x* + *x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 *x* + 4*x* + 7*x* + 8*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 4*x* + 9*x* + 10*x* + 7*x* + 2*x* + *x* + 9*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 3*x* + 8*x* + 7*x* + 7*x* + 7*x* + 2*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 9*x* + 2*x* + 4*x* + 2*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 2*x* + 3*x* + 6*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 5*x* + 7*x* + 2*x* + 2*x* + 5*x* + 9*x* + 8*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 9*x* + 4*x* + 10*x* + 8*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 *x* + 8*x* + 5*x* + 8*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 4*x* + 10*x* + 8*x* + 9*x* + 8*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 4*x* + 3*x* + 9*x* + 3*x* + 7*x* + 8*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 6*x* + 3*x* + 9*x* + 4*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 7*x* + 3*x* + *x* + 5*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 9*x* + 8*x* + 2*x* + 2*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 8*x* + 4*x* + 4*x* + 7*x* + 5*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 9*x* + 9*x* + 8*x* + 3*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 3*x* + 6*x* + 8*x* + 4*x* + 8*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 3*x* + 4*x* + 8*x* + 8*x* = 23*x*

Solution 2 10*x* + 7*x* + 9*x* + 8*x* + 7*x* + 9*x* + 8*x* + 2*x* = 60*x*

Solution 3 10*x* + 4*x* + 3*x* + 8*x* + 5*x* + 2*x* + 5*x* + 9*x* = 46*x*

Solution 4 3*x* + 3*x* + 3*x* + *x* + 8*x* = 18*x*

Solution 5 *x* + 4*x* + 7*x* + 8*x* + 7*x* = 27*x*

Solution 6 4*x* + 9*x* + 10*x* + 7*x* + 2*x* + *x* + 9*x* + 2*x* = 44*x*

Solution 7 3*x* + 8*x* + 7*x* + 7*x* + 7*x* + 2*x* + 6*x* = 40*x*

Solution 8 9*x* + 2*x* + 4*x* + 2*x* + 9*x* = 26*x*

Solution 9 2*x* + 3*x* + 6*x* + 5*x* + 8*x* = 24*x*

Solution 10 5*x* + 7*x* + 2*x* + 2*x* + 5*x* + 9*x* + 8*x* + 9*x* = 47*x*

Solution 11 9*x* + 4*x* + 10*x* + 8*x* + 7*x* = 38*x*

Solution 12 *x* + 8*x* + 5*x* + 8*x* + 3*x* = 25*x*

Solution 13 4*x* + 10*x* + 8*x* + 9*x* + 8*x* + 10*x* = 49*x*

Solution 14 4*x* + 3*x* + 9*x* + 3*x* + 7*x* + 8*x* + *x* = 35*x*

Solution 15 6*x* + 3*x* + 9*x* + 4*x* + 10*x* = 32*x*

Solution 16 7*x* + 3*x* + *x* + 5*x* + 3*x* = 19*x*

Solution 17 9*x* + 8*x* + 2*x* + 2*x* + 7*x* = 28*x*

Solution 18 8*x* + 4*x* + 4*x* + 7*x* + 5*x* + 10*x* = 38*x*

Solution 19 9*x* + 9*x* + 8*x* + 3*x* + 3*x* = 32*x*

Solution 20 3*x* + 6*x* + 8*x* + 4*x* + 8*x* + 4*x* = 33*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 6*x* + 9*x* + 3*x* + 9*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 2*x* + 5*x* + 4*x* + 2*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 4*x* + 10*x* + 2*x* + 7*x* + 6*x* + 5*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 *x* + *x* + 5*x* + *x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 5*x* + 2*x* + 2*x* + 5*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 9*x* + 5*x* + 6*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 7*x* + 3*x* + 9*x* + 2*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 4*x* + 3*x* + *x* + *x* + 9*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 9*x* + 5*x* + 4*x* + 10*x* + 10*x* + 4*x* + 10*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 3*x* + 6*x* + 3*x* + 4*x* + 6*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 *x* + 5*x* + 7*x* + 4*x* + *x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 10*x* + 5*x* + 5*x* + 9*x* + 8*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 4*x* + 10*x* + 8*x* + 6*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 8*x* + 3*x* + 2*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 7*x* + 10*x* + 6*x* + 10*x* + 3*x* + 3*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 3*x* + 6*x* + 7*x* + 6*x* + 6*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 4*x* + 6*x* + 8*x* + 3*x* + 8*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 *x* + *x* + 3*x* + 9*x* + 5*x* + 8*x* + 5*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 2*x* + *x* + 9*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 5*x* + 2*x* + *x* + 5*x* + 9*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 6*x* + 9*x* + 3*x* + 9*x* + 6*x* = 33*x*

Solution 2 2*x* + 5*x* + 4*x* + 2*x* + 7*x* = 20*x*

Solution 3 4*x* + 10*x* + 2*x* + 7*x* + 6*x* + 5*x* + 9*x* = 43*x*

Solution 4 *x* + *x* + 5*x* + *x* + *x* = 9*x*

Solution 5 5*x* + 2*x* + 2*x* + 5*x* + 8*x* = 22*x*

Solution 6 9*x* + 5*x* + 6*x* + 4*x* = 24*x*

Solution 7 7*x* + 3*x* + 9*x* + 2*x* = 21*x*

Solution 8 4*x* + 3*x* + *x* + *x* + 9*x* + 8*x* = 26*x*

Solution 9 9*x* + 5*x* + 4*x* + 10*x* + 10*x* + 4*x* + 10*x* + 6*x* =58*x*

Solution 10 3*x* + 6*x* + 3*x* + 4*x* + 6*x* + 6*x* = 28*x*

Solution 11 *x* + 5*x* + 7*x* + 4*x* + *x* + 3*x* = 21*x*

Solution 12 10*x* + 5*x* + 5*x* + 9*x* + 8*x* + 9*x* = 46*x*

Solution 13 4*x* + 10*x* + 8*x* + 6*x* + 10*x* = 38*x*

Solution 14 8*x* + 3*x* + 2*x* + 4*x* = 17*x*

Solution 15 7*x* + 10*x* + 6*x* + 10*x* + 3*x* + 3*x* + 5*x* = 44*x*

Solution 16 3*x* + 6*x* + 7*x* + 6*x* + 6*x* + 6*x* = 34*x*

Solution 17 4*x* + 6*x* + 8*x* + 3*x* + 8*x* = 29*x*

Solution 18 *x* + *x* + 3*x* + 9*x* + 5*x* + 8*x* + 5*x* + 9*x* = 41*x*

Solution 19 2*x* + *x* + 9*x* + 10*x* = 22*x*

Solution 20 5*x* + 2*x* + *x* + 5*x* + 9*x* + 3*x* = 25*x*

1. Réduction d'e*x*pressions littérales

E*x*ercice 1 8*x* + 10*x* + 6*x* + 6*x* + 9*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 2 5*x* + 9*x* + *x* + 7*x* + 6*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 3 5*x* + 4*x* + 10*x* + 10*x* + 9*x* + 5*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 4 9*x* + 6*x* + 9*x* + 2*x* + 8*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 5 8*x* + 10*x* + 7*x* + 3*x* + 5*x* + 4*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 6 10*x* + *x* + 8*x* + *x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 7 2*x* + 4*x* + 3*x* + 2*x* + *x* + 6*x* + 7*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 8 2*x* + 7*x* + *x* + 10*x* + 10*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 9 8*x* + 4*x* + 9*x* + *x* + 10*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 10 6*x* + 9*x* + 9*x* + 3*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 11 *x* + 3*x* + 7*x* + 3*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 12 6*x* + 5*x* + 7*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 13 5*x* + 8*x* + 4*x* + 6*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 14 7*x* + 2*x* + 8*x* + *x* + *x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 15 3*x* + 6*x* + 5*x* + 9*x* + 10*x* + 8*x* + 4*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 16 10*x* + *x* + 5*x* + 8*x* + 2*x* + *x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 17 9*x* + 3*x* + 2*x* + *x* + 9*x* + 4*x* + 9*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 18 7*x* + 2*x* + 7*x* + 7*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 19 3*x* + 9*x* + 2*x* + 9*x* + 9*x* + 4*x* + 5*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E*x*ercice 20 7*x* + 6*x* + 3*x* + 10*x* = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Solutions**

Solution 1 8*x* + 10*x* + 6*x* + 6*x* + 9*x* + 9*x* = 48*x*

Solution 2 5*x* + 9*x* + *x* + 7*x* + 6*x* + 4*x* = 32*x*

Solution 3 5*x* + 4*x* + 10*x* + 10*x* + 9*x* + 5*x* + 5*x* = 48*x*

Solution 4 9*x* + 6*x* + 9*x* + 2*x* + 8*x* + *x* = 35*x*

Solution 5 8*x* + 10*x* + 7*x* + 3*x* + 5*x* + 4*x* + 4*x* = 41*x*

Solution 6 10*x* + *x* + 8*x* + *x* = 20*x*

Solution 7 2*x* + 4*x* + 3*x* + 2*x* + *x* + 6*x* + 7*x* = 25*x*

Solution 8 2*x* + 7*x* + *x* + 10*x* + 10*x* + 3*x* = 33*x*

Solution 9 8*x* + 4*x* + 9*x* + *x* + 10*x* + 4*x* = 36*x*

Solution 10 6*x* + 9*x* + 9*x* + 3*x* + 10*x* = 37*x*

Solution 11 *x* + 3*x* + 7*x* + 3*x* = 14*x*

Solution 12 6*x* + 5*x* + 7*x* + 9*x* = 27*x*

Solution 13 5*x* + 8*x* + 4*x* + 6*x* = 23*x*

Solution 14 7*x* + 2*x* + 8*x* + *x* + *x* + 10*x* = 29*x*

Solution 15 3*x* + 6*x* + 5*x* + 9*x* + 10*x* + 8*x* + 4*x* = 45*x*

Solution 16 10*x* + *x* + 5*x* + 8*x* + 2*x* + *x* + 9*x* = 36*x*

Solution 17 9*x* + 3*x* + 2*x* + *x* + 9*x* + 4*x* + 9*x* = 37*x*

Solution 18 7*x* + 2*x* + 7*x* + 7*x* + 10*x* = 33*x*

Solution 19 3*x* + 9*x* + 2*x* + 9*x* + 9*x* + 4*x* + 5*x* = 41*x*

Solution 20 7*x* + 6*x* + 3*x* + 10*x* = 26*x*