**Further Practice 1.1A**

Basic

1. Expand the following expressions.

(a) 10 (b) 0.4*x*(10*y* $-$ *z*)

(c) 7*a*(4*b* $-$ *a*) (d) *y*(12 $-$ *y*) $-$ 8(3*y* + 2)

2. Expand the following expressions.

(a) (*u* $-$ 4)(*u* + 2) (b) (9 $-$ *v*)(3 $-$ *v*)

(c) (–*p* + 2)(*p* $-$ 1)

Intermediate

3. Expand the following expressions.

(a) (2*u* $-$ 3)(5*u* + 2) (b) ($-$*x* + 5)(3 $-$ 2*x*)

(c) (2*u* $-$ 3*v*)(5*u* $-$ *v*) (d) (*y* $-$ 2*x*)(3*x* + 5*y*)

Challenging

(3*m* + 2*n*) cm

(2*m* + *n*) cm

5 cm

3 cm

4. Jonathan cut out a rectangle that measures

(2*m* + *n*) cm by 3 cm from a piece of cardboard that measures (3*m* + 2*n*) cm by 5 cm. Find the area of the remaining cardboard.

5. Ali made a card using two rectangular pieces of paper. The rectangular pieces have the same height, 5 cm. The length of the bigger piece is 8*h* cm and the length of the smaller piece is (3*h* – 2*k*) cm. Find the total area of the card.

5 cm

8*h* cm

(3*h* – 2*k*) cm

**Further Practice 1.1B**

Basic

1. Expand the following using (*a* + *b*)2 = *a*2 + 2*ab* + *b*2.

(a) (*c* + 4)2 (b) (5 + *d*)2

2. Expand the following using (*a* $-$ *b*)2 = *a*2 − 2*ab* + *b*2.

(a) (*p* $-$ 5)2 (b) ($-$7 $-$ *q*)2

3. Expand the following using (*a* + *b*)(*a* $-$ *b*) = *a*2 $-$ *b*2.

(a) (*x* + 10)(*x* $-$ 10) (b) (5 $-$ *y*)(5 + *y*)

Intermediate

4. Expand the following expressions.

(a) (3*y* + 2)2 (b) (7 + 4*x*)2

 (c) (5*v* $-$ 4)2 (d) (3 $-$ 3*u*)2

 (e) (9*n* $-$ 6)(9*n* + 6) (f) (5 + 3*m*)(5 $-$ 3*m*)

Challenging

5. Find the area of the figure in terms of *a* and *b*.

*a* cm

*b* cm

*a* cm

*a* cm

*a* cm

*b* cm

*b* cm

*b* cm

**Further Practice 1.2A**

Basic

1. Factorise the following expressions.

(a) 18*x* + 27*y* (b) 36*v* + 24*u*

 (c) -3*c* $-$ 21*e* (d) 16*q* $-$ 20*r*

 (e) 2*u*2 $- $18*u* (f) 18*vw* $-$ 24*v*2

2. Factorise the following expressions.

(a) *xy* $-$ 2*x* + 7*y* $-$ 14 (b) -2*cd* + 6*de* + 3*c* $-$ 9*e*

Intermediate

3. Factorise the following expressions.

(a) -48*p*(*p* + *q*) $-$ 6*p*2 (b) -4*n*(*m* + 4) $-$ 6*n*(2*m* + 1)

(c) 2*v*(*u* $-$ 1) + 5(*u* $-$ 1) (d) 3*u*(2*v* $-$ 1) $-$ 5(2*v* $-$ 1)

(e) -3*x*(*y* $-$ 2) $-$ 9(*y* $-$ 2) (f) -15*p*(5 $- $*q*) $-$ 2*p*(*q* $-$ 5)

(g) *x*(*y* $-$ 1) $-$ (*y* $-$ 1) (h) (*a* + 1)2 + (*a* + 1)

4. Factorise the following expressions.

(a) 6*u*2 + 9*uv* $-$ 4*ut* $-$ 6*vt* (b) 6*qr* $-$ 4*pq* $-$ 3*pr* + 2*p*2

(c) 3*de* $-$ 15*cd* $-$ 45*ce* + 9*e*2 (d) 2*ac* + 5*b*2 $-$ 5*bc* $-$ 2*ab*

Challenging

5. Factorise the following expressions.

(a) 2*pyr* + 14*pyx* $-$ 5*qry* $-$ 35*qxy* (b) -9*ace* $-$18*ade* + 14*bde* + 7*bce*

**Further Practice 1.2B**

Basic

1. Factorise the following using the special result *a*2  2*ab* + *b*2 = (*a*  *b*)2.

(a) *x*2 + 8*x* + 16 (b) 4*y*2 + 12*y* + 9

 (c) *a*2 $-$ 14*a* + 49 (d) 9*b*2 $-$ 12*b* + 4

2. Factorise the following using the special result *a*2 − *b*2 = (*a* + *b*)(*a* – *b*).

(a) *p*2 $-$ 49 (b) 4*c*2 $-$ 25

 (c) *a*2 $-$ 1 (d) 2*a*2 $-$ 32

Intermediate

3. Factorise the following expressions.

(a) 9*v*2 + 30*vw* + 25*w*2 (b) 36*h*2 $-$ 12*hk* + *k*2

 (c) 4*x*2 $-$ 28*xy* + 49*y*2 (d) 9*r*2 $-$ 16*s*2

4. Evaluate the following expressions using the special result *a*2 $-$ *b*2 = (*a* + *b*)(*a* $-$ *b*).

(a) 56.72 $-$ 43.32

(b) 

Challenging

5. Factorise the following expressions using the special result a2 $-$ *b*2 = (*a* + *b*)(*a* $-$ *b*)*.*

(a) (2 $-$ *x*)2 $-$ 81

(b) (*p* + 4)2 $-$ 4*p*2

(c) *x*2*y*4 $-$ *x*4*y*2