#### **EXPANDING AND FACTORIZING**

#### Pearson Edexcel - Monday 6 November 2017 - Paper 2 (Calculator) Higher Tier

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1.
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```
16 Solve (x - 2)^2 = 3

Give your solutions correct to 3 significant figures.

(Total for Question 16 is 2 marks)
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Pearson Edexcel - Specimen Papers Set 1 - Paper 3 (Calculator) Higher Tier

2.

6 Factorise  $x^2 + 3x - 4$ 

(Total for Question 6 is 2 marks)

#### Pearson Edexcel - Sample Paper 1 - (Non-Calculator) Higher Tier

3.

**2** Expand and simplify (m + 7)(m + 3)

(Total for Question 2 is 2 marks)

Pearson Edexcel - Sample Paper 1 - (Non-Calculator) Higher Tier 4. **16** Factorise fully  $20x^2 - 5$ (Total for Question 16 is 2 marks) Pearson Edexcel - Thursday 9 June 2016 - Paper 2 (Calculator) Higher Tier 5. 2 (a) Simplify 3a × 5b × 2c (1) (b) Factorise 3y + 6(1) (c) Expand x(x - 3) (1) (Total for Question 2 is 3 marks)

Pearson Edexcel - Wednesday 4 November 2015 - Paper 1 (Non-Calculator) Higher Tier

10 (a) Expand x(x + 2)

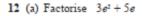
	(1)
(b) Expand and simplify 3(y + 2) + 4(x − 1)	
	(2)
(c) Expand and simplify (2t-3)(t+5)	
	(2)
(d) Factorise fully 8a <sup>2</sup> + 12a	
	(2)
(e) Factorise y <sup>2</sup> - y - 2	
	(2)
a	fotal for Question 10 is 9 marks)

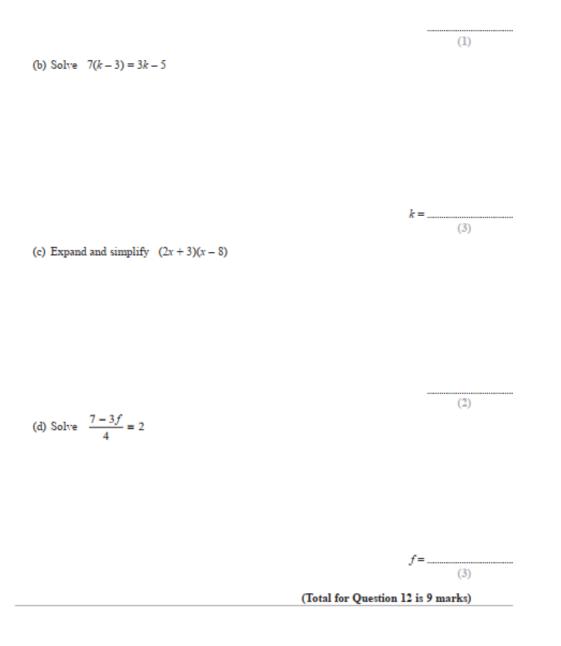
Pearson Edexcel - Monday 8 June 2015 - Paper 2 (Calculator) Higher Tier

7 (a) Expand 7(x + 5)

	(1)
(b) Expand 3y(4y - 3)	
() E	(1)
(c) Expand and simplify $(t+2)(t+4)$	
	(2)
	(Total for Question 7 is 4 marks)

Pearson Edexcel - Wednesday 5 November 2014 - Paper 1 (Non-Calculator) Higher Tier 8.





Pearson Edexcel - Monday 9 June 2014 - Paper 1 (Non-Calculator) Higher Tier

	(1
b) Factorise fully $3xy^2 - 6xy$	
	(2
rson Edexcel - Monday 9 June 2014 -	(Total for Question 6 is 3 marks Paper 1 (Non-Calculator) Higher Tier
son Edexcel - Monday 9 June 2014 -	
rson Edexcel - Monday 9 June 2014 - (a) Simplify (3x²y٩)³	

	(3)
(To	tal for Question 22 is 5 marks)

Pearson Edexcel - Wednesday 6 November 2013 - Paper 1 (Non-Calculator) Higher Tier 11.

(b) Factorise fully $9x^2 - 6xy$	(2)
(c) Expand $4(x+2)$	(2)
(d) Expand and simplify $(x - 5)(x + 3)$	(1)
	(2) (Total for Question 4 is 7 marks)

4 (a) Simplify 4y + 2x - 3 + 3x + 8

Pearson Edexcel - Tuesday 11 June 2013 - Paper 1 (Non-Calculator) Higher Tier 12.

4 (a) Expand 3(2+t)

(b) Expand 3x(2x + 5)

(c) Expand and simplify (m+3)(m+10)

(2)

(1)

(2)

# (Total for Question 4 is 5 marks)

Pearson Edexcel	Friday 14 June 2013 - Paper 2 (C	alculator) Higher Tier	
13.			
19 (a) Factorise	6 + 9x		
(b) Factorise	y <sup>2</sup> - 16		(1)
			(1)
(c) Factorise	$2p^2 - p - 10$		(*)
			(2)
		(Total for Question 19 is 4 ma	arks)

## Pearson Edexcel - Thursday 28 February 2013 - Paper 1 (Non-Calculator) Higher Tier

14.

20 (a) (i) Factorise $x^2 - 12x + 27$	
(ii) Solve the equation $x^2 - 12x + 27 = 0$	
(b) Factorise $y^2 - 100$	(3)
	(1)

(Total for Question 20 is 4 marks)

Pearson Edexcel - Monday 4 March 2013 - Paper 2 (Calculator) Higher Tier

) Factorise completely	$6y^2 - 9xy$	
		(2)
) Expand and simplify	(2x + 1)(x - 4)	(2)

11 (a) Expand and simplify 3(x + 4) + 2(5x - 1)

Pearson Edexcel - Tuesday 6 November 2012 - Paper 1 (Non-Calculator) Higher Tier 16.

		(1)
(b) Expand and simplify	2(x-4) + 3(x+5)	
c) Expand and simplify	(x + 4)(x + 6)	(2)
		(2)

Pearson Edexcel - Thursday 8 November 2012 - Paper 2 (Calculator) Higher Tier

17.

11 (a) Expand 4(3x + 5)

14 (a) Factorise	$x^{2} + 7x$
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		(1)
(b) Factorise	$y^2 - 10y + 16$	
		(2)
•(c) (i) Factorise	$2t^2 + 5t + 2$	
(ii) t is a positive	whole number.	
The expression	$2t^2 + 5t + 2$	can never have a value that is a prime number.
Explain why.		
		(3)

Pearson Edexcel - Monday 11 June 2012 - Paper 1 (Non-Calculator) Higher Tier

16 (a) Simplify	(m <sup>-2</sup> ) <sup>5</sup>	
(b) Factorise	$x^2 + 3x - 10$	(1)
		(2)
		(Total for Question 16 is 3 marks)

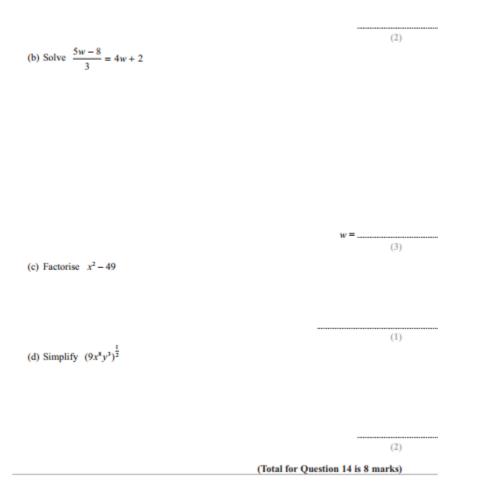
### Pearson Edexcel - Monday 11 June 2012 - Paper 1 (Non-Calculator) Higher Tier

19.

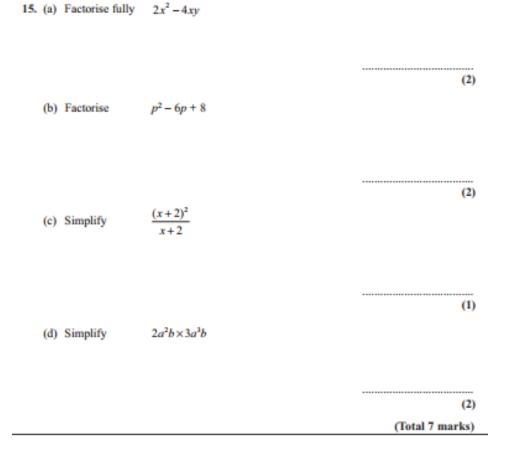
23 (a) Simplify fully  $\frac{x^2 + 3x - 4}{2x^2 - 5x + 3}$ 

		(3)	
(b) Write $\frac{4}{x+2} + \frac{3}{x-2}$	as a single fraction in its simplest form.	er.	
		(3)	
	(Total for (	Question 23 is 6 marks)	

Pearson Edexcel - Wednesday 13 June 2012 - Paper 2 (Calculator) Higher Tier



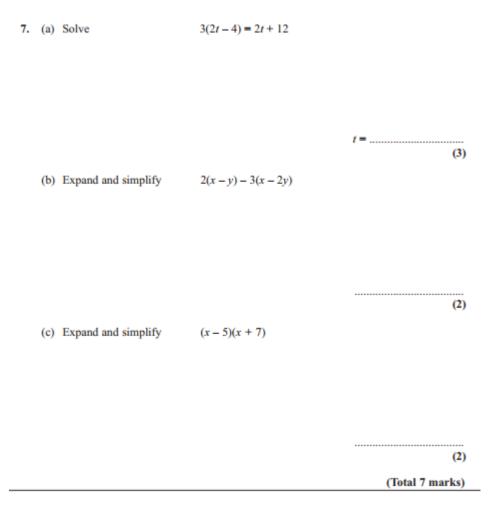
Pearson Edexcel - Friday 2 March 2012 - Paper 3 (Non-Calculator) Higher Tier 21.



Pearson Edexcel - Monday 5 March 2012 - Paper 4 (Calculator) Higher Tier

8. (a) Simplify $x^5 \times x^4$	
(b) Simplify $y^7 + y^2$	(1)
(c) Expand and simplify 3(2a + 5) + 5(a - 2)	(1)
(d) Expand and simplify $(y + 5)(y + 7)$	(2)
(e) Factorise $p^2 - 6p + 8$	(2)
	(2)
	(Total 8 marks)

Pearson Edexcel - Wednesday 9 November 2011 - Paper 3 (Non-Calculator) Higher Tier 23.



Pearson Edexcel - Monday 14 November 2011 - Paper 4 (Calculator) Higher Tier

### 24.

14. (a) Factorise 6x + 4
(b) Factorise fully 9x<sup>2</sup>y - 15xy
(c)
(c)
(c)
(c)

# Pearson Edexcel - Monday 14 November 2011 - Paper 4 (Calculator) Higher Tier

## 25.

			(Total 6 marks)	
			(3)	
(c) Wri	ite as a si	ngle fraction in its simplest form $\frac{2}{x-4} - \frac{1}{x+3}$		
			(1)	
(b) Fac	ctorise	$m^2 - 4$		
			(2)	
23. (a) Fac	aorise .	x + px + qx + pq		
23. (a) Fac	torise	$x^2 + px + qx + pq$		

Pearson Edexcel - Monday 6 June 2011 - Paper 3 (Non-Calculator) Higher Tier

15. (	a)	Expand	x(x	+ 2)
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	(2)
(b) Expand and simplify (x + 3)(x - 4)	
(b) Expand and shipping (x + 5/x - 4)	
	(2)
(c) Factorise completely 2y <sup>2</sup> -4y	
	(2)
(d) Factorise x <sup>2</sup> -9	
	(1)
(Total 7 mar	ks)

Pearson Edexcel - Tuesday 9 November 2010 - Paper 3 (Non-Calculator) Higher Tier

16. (a) Expand and simplify 3(x + 5) + 2(5x - 6)

	(2) (Total 6 marks)
(d) Factorise fully $x^2y + xy^2$	
	(1)
(c) Factorise $5x + 10$	
	(1)
(b) Simplify $\frac{2x+4}{2}$	(-)
	(2)

Pearson Edexcel - Monday 7 June 2010 - Paper 3 (Non-Calculator) Higher Tier 28.

(b) Solve $4(2x-3) = 5x + 7$	(1)
(c) Expand and simplify $(y + 4)(y + 5)$	x =(3)
(d) Factorise fully $8x^2 + 12xy$	(2)
Pearson Edexcel - Friday 11 June 2010 - 29. 19. (a) Factorise $x^2 - 7x + 10$	(2) (Total 8 marks) Paper 4 (Calculator) Higher Tier
(b) Solve $x^2 - 7x + 10 = 0$	(2)

**17.** (a) Factorise 3x + 12

x = ..... or x = .....(1)

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(Total 3 marks)
```

# Pearson Edexcel - Thursday 5 November 2009 - Paper 3 (Non-Calculator) Higher Tier

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10. (a) Simplify 3a + 4c - a + 3c
                                                                            (2)
   (b) Expand y(2y - 3)
                                                                            (1)
   (c) Factorise x<sup>2</sup> - 4x
                                                                            (2)
   (d) Expand and simplify 2(x + 3) + 3(2x - 1)
                                                                            (2)
   (e) Solve 3(x + 2) = 8
                                                            x = .....
                                                                            (2)
                                                                (Total 9 marks)
```

OCR GSCE – Tuesday 3 November 2020 – Paper 4 (Calculator) Higher Tier 31.

### 17 Expand and simplify.

(x+1)(x-1)(x+2)

.....[3]

OCR GSCE – Tuesday 5 November 2019 – Paper 4 (Calculator) Higher Tier 32.

**16** Show that  $\frac{x+9}{x^2-1} + \frac{4}{x+1}$  can be written in the form  $\frac{a}{x-1}$ , where *a* is an integer. [4]

OCR GSCE – Thursday 7 November 2019 – Paper 5 (Non-Calculator) Higher Tier

33.

6 Solve by factorising.

 $x^2 + 9x + 20 = 0$ 

OCR GSCE – Tuesday 21 May 2019 – Paper 4 (Calculator) Higher Tier 34.

**17** Show that  $(a^3)^{-\frac{1}{3}} \times (a^2)^{\frac{1}{2}} = 1.$  [3]

# OCR GSCE – Tuesday 11 June 2019 – Paper 6 (Calculator) Higher Tier

35.

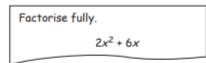
15 Solve by factorisation.

 $5x^2 + 7x + 2 = 0$ 

### OCR GSCE – Tuesday 6 November 2018 – Paper 4 (Calculator) Higher Tier

#### 36.

13 Tenzin is given this question.



Here is his answer.

$$2x^2 + 6x = x(2x + 6)$$

Explain why Tenzin's answer is not correct.

### OCR GSCE – Monday 12 November 2018 – Paper 6 (Calculator) Higher Tier

21 Show that 
$$\frac{5x}{x+5} + \frac{25}{x-7} - \frac{300}{(x+5)(x-7)}$$
 simplifies to an integer. [6]

# OCR GSCE – Thursday 24 May 2018 – Paper 4 (Calculator) Higher Tier

38.

16 Solve by factorisation.

 $3x^2 + 11x - 20 = 0$ 

# OCR GSCE – Thursday 7 June 2018 – Paper 5 (Non - Calculator) Higher Tier

39.

17  $(x+a)(x+3)(2x+1) = bx^3 + cx^2 + dx - 12$ 

Find the value of a, b, c and d.

a =
b =
c =
d =[4]

### OCR GSCE – Tuesday 12 June 2018 – Paper 6 (Calculator) Higher Tier

40.

**19** Show that 
$$\frac{2x^2 + 13x + 20}{2x^2 + x - 10}$$
 simplifies to  $\frac{x+a}{x-b}$  where *a* and *b* are integers. [4]

### OCR GSCE – Tuesday 2 November 2017 – Paper 4 (Calculator) Higher Tier

41.

**15** Show that 
$$\frac{(4+2\sqrt{5})}{\sqrt{5}-1}$$
 can be simplified to  $\frac{3\sqrt{5}+7}{2}$ . [4]

### OCR GSCE – Thursday 25 May 2017 – Paper 4 (Calculator) Higher Tier

#### 42.

**16** Write  $x^2 - 10x + 16$  in the form  $(x + a)^2 + b$ .

[3	3	5				
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# OCR GSCE – Thursday 8 June 2017 – Paper 5 (Non - Calculator) Higher Tier

43.

17 (a) Simplify.

$$\frac{x^2-16}{x^2-3x-4}$$

(a) .....[4]

**(b)** 
$$(x+3)(x-4)(x+5)$$
 is identical to  $x^3 + ax^2 - 17x + b$ .

Find the value of a and the value of b.

AQA GSCE - Tuesday 19 May 2020 - Paper 1 (Non - Calculator) Higher Tier 44. 28 Factorise fully  $144 - 4x^2$ [2 marks] Answer \_\_\_\_\_ AQA GSCE – Thursday 4 June 2020 – Paper 2 (Calculator) Higher Tier 45. 19 a and b are positive values.  $\frac{7a+2b-3a}{8a+6b+2a-b}$ Show that always simplifies to the same value. [3 marks]

	CE – Thursday 4 June 2020 – P	aper 2 (Calculator) Higher Tier	
46. 25	Factorise $3x^2 + 11x - 20$		[2 marks]
AQA GS( 47.	CE – Thursday 8 June 2020 – P	aper 3 (Calculator) Higher Tier	
10	Expand and simplify fully	4(2 <i>c</i> + 3) – (5 <i>c</i> – 1)	[2 marks]
	Answer		

# AQA GSCE – Tuesday 21 May 2019 – Paper 1 (Non - Calculator) Higher Tier

48.

18 Here is an identity.

$$x^{2} - y^{2} = (x + y)(x - y)$$

18 (	(a)		entity to work out the value o show your working.	f 193 <sup>2</sup> – 7 <sup>2</sup>	
			, oor your norming.		[2 marks]
			Answer		
18 (	(b)	Factorise	$100a^2 - 81b^2$		[1 mark]

Answer

## AQA GSCE – Thursday 6 June 2019 – Paper 2 (Calculator) Higher Tier

49.

**26**  $(x + 5)(x + 2)(x + a) = x^3 + bx^2 + cx - 30$ 

Work out the values of the integers a, b and c.

[3 marks]



AQA GSCE – Monday 24 May 2018 – Paper 1 (Non - Calculator) Higher Tier

27 (a)	Jo wants to work out the solutions of $x^2 + 3x - 5 = 0$
	She says,
	"The solutions cannot be worked out because
	$x^{2} + 3x - 5$ does <b>not</b> factorise to $(x + a)(x + b)$ where a and b are integers."
	x + 6x = 5 does not racionse to $(x + a)(x + b)$ where a and b are integers.
	Is Jo correct?
	Tick a box.
	Yes No
	Give a reason for your answer. [1 mark]
27 (b)	Without expanding any brackets,
21 (-)	show how to work out the <b>exact</b> solutions of $9(x + 3)^2 = 4$
	Give the solutions. [3 marks]
	[e marke]

# AQA GSCE – Monday 24 May 2018 – Paper 1 (Non - Calculator) Higher Tier

51.

28	Simplify	$\sqrt{80} + \sqrt{2\frac{2}{9}}$			
	Give your a	nswer in the form	$\frac{a\sqrt{5}}{b}$	where a and b are integers.	
					[3 marks]
		Answer			

AQA GSCE – Thursday 6 November 2017 – Paper 2 (Calculator) Higher Tier

Factorise fully 9y <sup>3</sup> –	6 <i>y</i>	[2 marks]
	Answer	
Factorise $3x^2 - 22x$	+ 7	
		[2 marks]
	Answer	
– Wednesday 8 Novei	mber 2017 – Paper 3 (Calculator) Higher Tier	
Expand and simplify	$(3x^2 + 2)(2x + 5) - 6x(x^2 - 3)$	[4 marks]
Answ	er	
	Factorise $3x^2 - 22x$	Factorise 3x <sup>2</sup> - 22x + 7

54.				
26	Expand and simplify	$(x-4)(2x+3y)^2$	[4 marks]	
	Answer			
<b>AQA GS</b> 55.	CE – Sample Paper 3	3 (Calculator) Higher Tier		
17	Factorise 3x <sup>2</sup>	$x^{2} + 14x + 8$		[2 marks]
		Answer		

AQA GSCE – Wednesday 25 May 2017 – Paper 1 (Non - Calculator) Higher Tier