

**FOMP 10 Chapter 5 Review Pack v1**  
**Answer Section**

**SHORT ANSWER**

1. ANS:  
 $x^2 + 4x - 45$   
 PTS: 1                      DIF: 1-2  
 TOP: Multiplying Polynomials  
 OBJ: Section 5.1    NAT: AN4  
 KEY: multiplying | binomial by binomial | distributive property
2. ANS:  
 $x^2 - 11x + 28$   
 PTS: 1                      DIF: 1-2  
 TOP: Multiplying Polynomials  
 OBJ: Section 5.1    NAT: AN4  
 KEY: multiplying | binomial by binomial | distributive property
3. ANS:  
 $A = 16x^2 + 4x - 12$   
 PTS: 1                      DIF: 1-2  
 TOP: Multiplying Polynomials  
 OBJ: Section 5.1    NAT: AN4  
 KEY: multiplying | binomial by binomial | distributive property
4. ANS:  
 $25x^2 + 20x + 4$   
 PTS: 1                      DIF: 1-2  
 TOP: Multiplying Polynomials  
 OBJ: Section 5.1    NAT: AN4  
 KEY: multiplying | binomial by binomial | distributive property
5. ANS:  
 9  
 PTS: 1                      DIF: 1-2  
 TOP: Common Factors  
 OBJ: Section 5.2    NAT: AN1 | AN5  
 KEY: factoring | GCF
6. ANS:  
 $12(t - 7)$   
 PTS: 1                      DIF: 1-2  
 TOP: Common Factors  
 OBJ: Section 5.2    NAT: AN5  
 KEY: factoring | binomial | symbolic
7. ANS:  
 $-2(7x - 7)$   
 PTS: 1                      DIF: 1-2  
 TOP: Common Factors  
 OBJ: Section 5.2    NAT: AN5  
 KEY: factoring | binomial | symbolic
8. ANS:  
 $5(x^2 - 11)$   
 PTS: 1                      DIF: 1-2  
 TOP: Common Factors  
 OBJ: Section 5.2    NAT: AN5  
 KEY: factoring | binomial | symbolic

9. ANS:

$$e^2 - 2ef + f^2$$

PTS: 1 DIF: 1-2 OBJ: Section 5.4 NAT: AN4

TOP: Factoring Special Trinomials

KEY: multiplying | binomial by binomial | distributive property | perfect square | trinomial

10. ANS:

$$(x - 7)(x - 4)$$

PTS: 1 DIF: 1-2 OBJ: Section 5.3 NAT: AN5

TOP: Factoring Trinomials

KEY: factoring | trinomial

11. ANS:

$$(x - 6)(x + 4)$$

PTS: 1 DIF: 1-2 OBJ: Section 5.3 NAT: AN5

TOP: Factoring Trinomials

KEY: factoring | trinomial

12. ANS:

$$12 = 2 \times 2 \times 3$$

$$54 = 2 \times 3 \times 3 \times 3$$

$$72 = 2 \times 2 \times 2 \times 3 \times 3$$

The greatest common factor is  $2 \times 3 = 6$ .

PTS: 1 DIF: 1-2 OBJ: Section 5.2 NAT: AN1

TOP: Common Factors

KEY: GCF

13. ANS:

monomial

PTS: 1 DIF: 1-2 OBJ: Section 5.1 NAT: AN4

TOP: Multiplying Polynomials

KEY: monomial | polynomial

14. ANS:

trinomial

PTS: 1 DIF: 1-2 OBJ: Section 5.1 NAT: AN4

TOP: Multiplying Polynomials

KEY: polynomial | trinomial

15. ANS:

$$A = 4x^2 - 12x + 8$$

PTS: 1 DIF: 3-4 OBJ: Section 5.1 NAT: AN4

TOP: Multiplying Polynomials

KEY: multiplying | binomial by binomial | area | distributive property

16. ANS:

$$A = 12x^2 + 3x - 42$$

PTS: 1 DIF: 3-4 OBJ: Section 5.1 NAT: AN4

TOP: Multiplying Polynomials

KEY: multiplying | binomial by binomial | area | distributive property

17. ANS:  
 $6x^2 - 24x + 24$
- PTS: 1                    DIF: 3-4                    OBJ: Section 5.1    NAT: AN4  
 TOP: Multiplying Polynomials  
 KEY: multiplying | binomial by binomial | distributive property | surface area
18. ANS:  
 21b
- PTS: 1                    DIF: 3-4                    OBJ: Section 5.2    NAT: AN1 | AN5  
 TOP: Common Factors                    KEY: factoring | GCF
19. ANS:  
 $(5m + 6n)(n + 1)$
- PTS: 1                    DIF: 3-4                    OBJ: Section 5.1    NAT: AN5  
 TOP: Multiplying Polynomials                    KEY: factoring | symbolic
20. ANS:  
 $-6(11x^2 - 4x - 3)$
- PTS: 1                    DIF: 3-4                    OBJ: Section 5.2    NAT: AN5  
 TOP: Common Factors                    KEY: factoring | trinomial | symbolic
21. ANS:  
 $mnp$
- PTS: 1                    DIF: 3-4                    OBJ: Section 5.2    NAT: AN5  
 TOP: Common Factors                    KEY: LCM
22. ANS:  
 $(3x + 1)(2x + 5)$
- PTS: 1                    DIF: 3-4                    OBJ: Section 5.3    NAT: AN5  
 TOP: Factoring Trinomials                    KEY: factoring | trinomial
23. ANS:  
 $(2x + 8)(x + 10)$
- PTS: 1                    DIF: 3-4                    OBJ: Section 5.3    NAT: AN5  
 TOP: Factoring Trinomials                    KEY: factoring | trinomial
24. ANS:  
 210 cm by 106 cm
- PTS: 1                    DIF: 5-6                    OBJ: Section 5.2    NAT: AN5  
 TOP: Common Factors                    KEY: area | factoring | binomial | symbolic | substitution
25. ANS:  
 130x by  $x + 20$
- PTS: 1                    DIF: 5-6                    OBJ: Section 5.2    NAT: AN5  
 TOP: Common Factors                    KEY: area | factoring | binomial | symbolic

26. ANS:

$$(a + b + c)(20x + 14y + 4w)$$

PTS: 1

DIF: 5-6

OBJ: Section 5.2 NAT: AN5

TOP: Common Factors

KEY: factoring | polynomial

27. ANS:

Substitute 12 m for  $h$ :

$$-5t^2 + 15t + 2 = 12$$

$$-5t^2 + 15t - 10 = 0$$

$$-5(t^2 - 3t + 2) = 0$$

$$-5(t - 1)(t - 2) = 0$$

The height of the puck is 12 m when  $t = 1$  and when  $t = 2$ . The student caught the puck on its way down, so it had been in the air for 2 s.

PTS: 1

DIF: 5-6

OBJ: Section 5.3 NAT: AN1 | AN5

TOP: Factoring Trinomials

KEY: factoring | GCF | trinomial | substitution

28. ANS:

The width, length, and height are  $x$ ,  $(x + 4)$ , and  $(x + 6)$ , respectively.

$$SA_{\text{prism}} = 2x(x + 4) + 2x(x + 6) + 2(x + 4)(x + 6)$$

$$SA_{\text{prism}} = 2x^2 + 8x + 2x^2 + 12x + 2x^2 + 20x + 48$$

$$SA_{\text{prism}} = 6x^2 + 40x + 48$$

The surface area of the prism is  $(6x^2 + 40x + 48)$  cm<sup>2</sup>.

PTS: 1

DIF: 5-6

OBJ: Section 5.1 NAT: AN4

TOP: Multiplying Polynomials

KEY: multiplying | monomial by binomial | binomial by binomial | distributive property | surface area

29. ANS:

Substitute 45 handshakes for  $H$ :

$$\frac{x^2 - x}{2} = 45$$

$$x^2 - x = 90$$

$$x^2 - x - 90 = 0$$

$$(x + 9)(x - 10) = 0$$

There are 45 handshakes when  $x = -9$  and when  $x = 10$ . There could not have been  $-9$  people at the reunion, so there must have been 10 people at the reunion.

PTS: 1

DIF: 5-6

OBJ: Section 5.3 NAT: AN5

TOP: Factoring Trinomials

KEY: factoring | trinomial

30. ANS:

Answers may vary.

Since the volume of a prism is given by area of the base times the height, factor the algebraic expression:

$$V = 18\pi x^3 + 48\pi x^2 + 32\pi x$$

$$V = 2\pi x(9x^2 + 24x + 16)$$

$$V = 2\pi x(3x + 4)^2$$

Look for scenarios such as the following:

Scenario 1: This expression could represent the volume of a square-based prism, whose height is  $2\pi x$  and whose square base has side lengths  $(3x + 4)$ .

Scenario 2: This expression could also represent the volume of a rectangular prism, with the dimensions of the base being  $2\pi x$  by  $3x + 4$  and the height being  $3x + 4$ .

Scenario 3: This expression can also be written in the form

$$V = \pi r^2 h \text{ or } \pi(3x + 4)^2(2x).$$

This format can represent the volume of a right cylinder with  $r = 3x + 4$  and  $h = 2x$ .

Scenario 4: This expression could represent a triangular prism with base area  $\frac{1}{2}(4\pi x)(3x + 4)$  and height  $(3x + 4)$ .

PTS: 1

DIF: 7-8

OBJ: Section 5.4 NAT: AN1 | AN5

TOP: Factoring Special Trinomials

KEY: factoring | GCF | trinomial | volume | perfect square

31. ANS:

**a)** We need two numbers whose product is  $-19$ . These can be  $-19$  and  $1$ , or  $19$  and  $-1$ . So,  $k$  can be either  $18$  or  $-18$ .

**b)** The possible factors are  $(2x + 3)(x + 5)$ ,  $(2x - 3)(x - 5)$ ,  $(x + 3)(2x + 5)$ ,  $(x - 3)(2x - 5)$ ,  $(2x + 15)(x + 1)$ ,  $(2x - 15)(x - 1)$ ,  $(x + 15)(2x + 1)$ , and  $(x - 15)(2x - 1)$ .

These factors give possible values of  $k$  of  $13$ ,  $-13$ ,  $11$ ,  $-11$ ,  $17$ ,  $-17$ ,  $31$ , and  $-31$ .

**c)** The possible factors are  $(3x + 11)^2$  or  $(3x - 11)^2$ .

The possible values of  $k$  are  $66$  and  $-66$ .

**d)** The expression can be factored over the integers for any value of  $k$  that is a square, that is,  $1$ ,  $4$ ,  $9$ ,  $16$ ,  $25$ , ...

PTS: 1

DIF: 7-8

OBJ: Section 5.3 NAT: AN5

TOP: Factoring Trinomials

KEY: factoring | trinomial