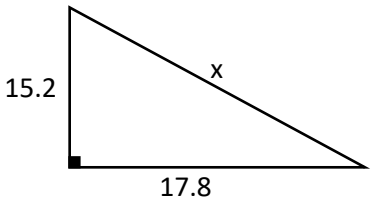
Check Your Understanding – Pythagorean Theorem and Polynomials Test Review

The table below identifies the key concepts from this unit.

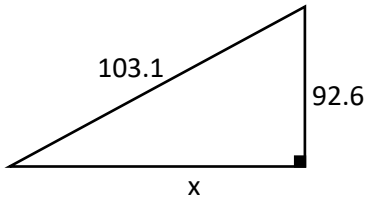
1. Check your understanding by completing these questions.
2. Check your answers in the key provided.
3. In the table below, highlight the questions you got correct.
4. Ask peers/Dr. James about concepts where you can improve.

Key Concepts	Mild	Medium	Spicy
Pythagorean Theorem	1, 2	3, 4	5
Combining Like Terms	6	7	8
Polynomial Multiplication	9	10, 11	12
Simplifying fractions using the G.C.F.	13	14, 15	16

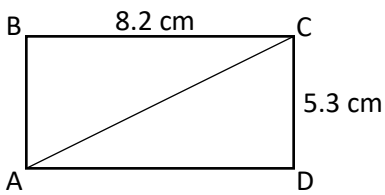
1) Find the length of side x in the right triangle below.



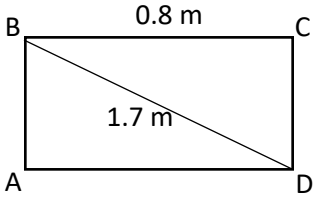
2) Find the length of side x in the right triangle below.



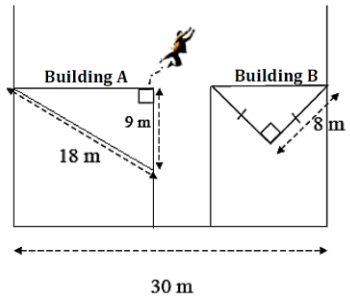
3) A diagonal line is drawn between the corners A and C in the rectangle below. Determine the length of line AC.



4) Use the information in the diagram below to determine the width of the rectangle.



5) A stunt double is practicing for their role in an upcoming movie. From previous experience, we know that this person can jump a maximum horizontal distance of 5 m. Will the stunt double be able to jump from building A to building B?



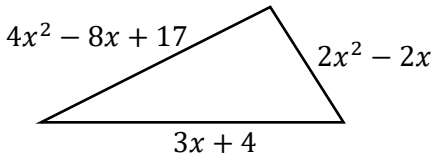
6) Simplify the following algebraic expression.

$$3x^2 - 2x + 7x + 4x^2$$

7) Simplify the following algebraic expression.

$$(2x^2y + 4xy^2) - (xy^2 + 3x^2y) + 8xy^2$$

8) Determine the perimeter of the triangle below.



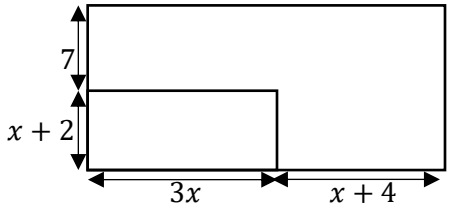
9) Determine the following product.

$$3x^2y^3z(4x^5y^7z^3 - 2zy)$$

10) Determine the product of the following binomials.

$$(2x + 4)(3x - 7)$$

11) A rectangle has a length of $3x$ and a width of $x + 2$. If the length of the rectangle increases by $x + 4$ and the width of the rectangle increases by 7 (as shown in the diagram below), what is the area of the new rectangle?

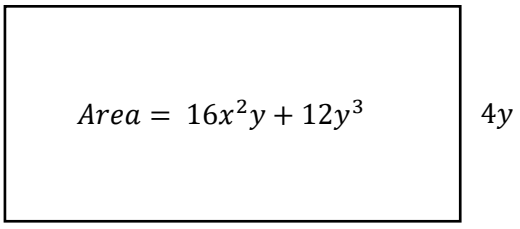


12) Determine the area of a triangle that has a base of $3x^2y + 2$ and a height of $4xy + 2$.

13) Simplify the following algebraic expression.

$$\frac{9x^2 + 15x}{3x}$$

14) Determine the perimeter of a rectangle that has an area of $16x^2y + 12y^3$ and a width of $4y$, as shown in the diagram below.



15) Determine the height of a triangle that has an area of $2x^5y^2z^7 + 18x^3y^4z^6$ and a base of $4x^3y^2z^6$.

16) Simplify the following algebraic expression.

$$\frac{5(x^5y^4 + 2x^2y^3) + 10(x^5y^4 + 2x^2y^3)}{5(2x^3y^4)}$$

Answers

1) $x = 23.41\ units$

2) $x = 45.33\ units$

3) AC is $9.76\ cm$

4) The width of the rectangle is $1.5\ m$

5) Yes, they will be able to jump from Building A to Building B

6) $7x^2 + 5x$

7) $-x^2y + 11xy^2$

8) $Perimeter = 6x^2 - 7x + 21$

9) $12x^7y^{10}z^4 - 6x^2y^4z^2$

10) $6x^2 - 2x - 28$

11) $Area = 4x^2 + 40x + 36$

12) $Area = 6x^3y^2 + 3x^2y + 4xy + 2$

13) $3x + 5$

14) $Perimeter = 8x^2 + 6y^2 + 8y$

15) $height = x^2z + 9y^2$

16) $\frac{3x^3y+6}{2xy}$