**Chapter 1 - Measurement & Number Sense Practice Test**

**True/False**

*Indicate whether the sentence or statement is true or false.*

*If false, write the corrected statement in the space provided.*

\_\_\_\_ 1. Perimeter is the total distance around the outside of a two-dimensional shape.

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\_\_\_\_ 2. *P* = (2  *l*) + ( 2  *w*) and *P* = 2  (*l* + *w*) are the same formula for the perimeter of a rectangle.

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

\_\_\_\_ 3. The height of a parallelogram is always at right angles to its base.

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\_\_\_\_ 4. The formula for the area of a triangle is *A* = *b*  *h*.

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\_\_\_\_ 5. Shapes that are identical but in different positions cannot be congruent.

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\_\_\_\_ 6. The answer for the calculation 15 – (3 + 2.5)  2 is 7.

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\_\_\_\_ 7. The formula for the area of a trapezoid is: *A* = (*a* + *b*)  *h* ÷ 2.

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\_\_\_\_ 8. A two-dimensional shape that can be split into two or more simpler shapes is known as a composite shape.

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\_\_\_\_ 9. In a composite shape, you find the perimeter by adding the perimeters of the split shapes.

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**Multiple Choice**

*Identify the letter of the choice that best completes the statement or answers the question.*

\_\_\_\_ 10. Calculate the perimeter of this hexagon.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | 190 cm | c. | 285 cm |
| b. | 235 cm | d. | 315 cm |

\_\_\_\_ 11. Kent wants to put a fence around his rectangular backyard. The backyard measures 10 m by 16 m. If fencing costs $20/m, how much will Kent spend?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | $320 | c. | $640 |
| b. | $520 | d. | $1040 |

\_\_\_\_ 12. Calculate the area of this parallelogram.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | 20 cm2 | c. | 40 cm2 |
| b. | 24 cm2 | d. | 48 cm2 |

\_\_\_\_ 13. Find the area of a parallelogram with a base of 5 cm, a height of 7 cm, and a side length of 8 cm.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 20 cm2 | c. | 40 cm2 |
| b. | 35 cm2 | d. | 56 cm2 |

\_\_\_\_ 14. Find the area of an isosceles triangle with a base of 9 cm, a height of 7 cm, and the equal side of 12 cm.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 31.5 cm2 | c. | 63.25 cm2 |
| b. | 42 cm2 | d. | 84 cm2 |

\_\_\_\_ 15. Which operation do you perform first in the expression 7 + (5 – 3)  4 ÷ 2?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | addition | c. | brackets |
| b. | multiplication | d. | division |

\_\_\_\_ 16. Evaluate the expression (6 + 4) ÷ 2  3 – 3.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 3 | c. | 12 |
| b. | 9 | d. | 21 |

\_\_\_\_ 17. Calculate the area of this trapezoid.



|  |  |  |  |
| --- | --- | --- | --- |
| a. | 70 cm2 | c. | 105 cm2 |
| b. | 75 cm2 | d. | 140 cm2 |

**Matching**

*Match the correct term to each of the following descriptions.*

|  |  |  |  |
| --- | --- | --- | --- |
| a. | quadrilateral | e. | regular octagon |
| b. | parallelogram | f. | regular polygon |
| c. | polygon | g. | regular hexagon |
| d. | trapezoid | h. | vertex |

\_\_\_\_ 18. any four-sided figure

\_\_\_\_ 19. a point on a figure where two sides meet

\_\_\_\_ 20. a regular polygon with eight sides

\_\_\_\_ 21. a polygon with all sides equal and all angles equal

*Match the correct term to each of the following descriptions/formulas.*

|  |  |  |  |
| --- | --- | --- | --- |
| a. | composite shape | e. | area of a trapezoid |
| b. | area of a triangle | f. | height |
| c. | area of a rectangle | g. | area of parallelogram |
| d. | perimeter | h. | vertex |

\_\_\_\_ 22. *A* = *l*  *w*

\_\_\_\_ 23. the total distance around the outside of a two-dimensional shape

\_\_\_\_ 24. the measure of a figure that is at right angles to the base

\_\_\_\_ 25. *A* = *b*  *h*

\_\_\_\_ 26. a point on a figure where two sides meet

\_\_\_\_ 27. a two-dimensional shape that can be split into two or more simpler shapes

**Short Answer**

*Write your answer in the space provided.*

 28. Complete the table for each rectangle with the dimensions given.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Length** | **Width** | **Perimeter** |
| a) | 9 m | 3 m |  |
| b) | 4.5 cm | 6.6 cm |  |
| c) | 35 mm | 50 mm |  |
| d) | 12 cm | 6 cm |  |
| e) | 7.5 m | 6.5 m |  |

 29. Determine the perimeter of each polygon.

|  |  |  |
| --- | --- | --- |
| **Shape** | **Side Length (cm)** | **Perimeter (cm)** |
| Triangle | 3.3, 4.5, 1.8 |  |
| Quadrilateral | 4.4, 2.8, 3.9, 5.0 |  |
| Square | 6.6 |  |
| Rectangle | 5.2, 7.4 |  |
| Parallelogram | 2.8, 4.9 |  |
| Regular pentagon | 3.6 |  |
| Isosceles trapezoid | 0.8, 2.3, 3.2, 3.2 |  |
| Regular hexagon | 7.8 |  |

 30. Describe how to calculate the perimeter of a regular octagon.

 31. Jonathon calculates the perimeter of a geometric shape by following these steps:

*P* = 2  (*l* + *w*)

*P* = 2  (7.5 cm + 5 cm)

a) Draw and label the shape.

b) Calculate the perimeter.

c) Calculate the area.

 32. Each side of a triangle measures 1.9 m. Each side of a square measures 1.4 m.

Which shape has the greater perimeter? Explain.

 33. Mrs. Hogan’s backyard measures 10 m by 16 m. She wants to put up a fence that costs $45/m. How much will be the cost of fencing?

 34. If two triangles have the same perimeter, will they have the same area? Explain your answer using pictures, numbers, and symbols.

 35. Insert brackets to make the equation true.

14 + 8 – 3  2 + 10 ÷ 5 = 18

 36. Draw a trapezoid with the area of 46 cm2 and label the sides. What is the perimeter of the trapezoid? Show your work.

 37. Explain the steps needed to find the perimeter and area of a composite shape.

**Problem**

*Write your answer in the space provided.*

 38. The area of a triangular-shaped herb garden is 72 m2. The base of the triangle is 6 m. What is its height? Explain your answer.

 39. Using the grid provided, draw a trapezoid with an area of 12 cm2. The trapezoid has a base of 5 cm and a height of 3 cm. Find the length of side *a*, and label the diagram with all of the known measures.

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 40. Use more than one of these shapes to create a logo for your favourite sports team. Decide on the dimensions. Include a composite shape in your design. When you have finished with your design, calculate the total area and perimeter of the composite shape. Show all measurements and calculations.



**Chapter 1 - Measurement & Number Sense Practice Test**

**Answer Section**

**TRUE/FALSE**

 1. ANS: T DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Perimeter

 2. ANS: T DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Perimeter

 3. ANS: T DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 1.2 STO: Mea-7m28 TOP: Measurement

KEY: Parallelogram

 4. ANS: F

The formula for the area of a triangle is *A* = *b*  *h* ÷ 2.

DIF: Level 1 REF: Knowledge/Understanding OBJ: Section 1.3

STO: Mea-7m28 TOP: Measurement KEY: Triangle, Area

 5. ANS: F

Shapes that are identical but in different positions are congruent.

DIF: Level 4 REF: Knowledge/Understanding OBJ: Section 1.3

STO: Mea-7m28 TOP: Measurement KEY: Congruent

 6. ANS: F

The answer for the calculation 15 – (3 + 2.5)  2 is 4.

DIF: Level 3 REF: Application OBJ: Section 1.4 STO: NSN-7m3

TOP: Number Sense and Numeration KEY: BODMAS

 7. ANS: T DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.5 STO: Mea-7m28 TOP: Measurement

KEY: Area, Trapezoid

 8. ANS: T DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.7 STO: Mea-7m28 TOP: Measurement

KEY: Composite Shape

 9. ANS: F

In a composite shape, you find the area by adding the areas of the split shapes.

DIF: Level 2 REF: Knowledge/Understanding OBJ: Section 1.7

STO: Mea-7m28 TOP: Measurement KEY: Composite Shape, Perimeter

**MULTIPLE CHOICE**

 10. ANS: C DIF: Level 3 REF: Application OBJ: Section 1.1

STO: Mea-7m30 TOP: Measurement KEY: Perimeter

 11. ANS: D DIF: Level 3 REF: Thinking/Inquiry/Problem Solving

OBJ: Section 1.1 STO: Mea-7m30 TOP: Measurement

KEY: Perimeter

 12. ANS: C DIF: Level 2 REF: Application OBJ: Section 1.2

STO: Mea-7m30 TOP: Measurement KEY: Area, Parallelogram

 13. ANS: B DIF: Level 2 REF: Application OBJ: Section 1.2

STO: Mea-7m30 TOP: Measurement KEY: Area, Parallelogram

 14. ANS: A DIF: Level 2 REF: Application OBJ: Section 1.3

STO: Mea-7m30 TOP: Measurement KEY: Area, Triangle

 15. ANS: C DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.4 STO: NSN-7m3 TOP: Number Sense and Numeration

KEY: BODMAS

 16. ANS: C DIF: Level 2 REF: Application OBJ: Section 1.4

STO: NSN-7m3 TOP: Number Sense and Numeration KEY: BODMAS

 17. ANS: A DIF: Level 3 REF: Application OBJ: Section 1.5

STO: Mea-7m30 TOP: Measurement KEY: Area, Trapezoid

**MATCHING**

 18. ANS: A DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Polygon

 19. ANS: H DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Vertex

 20. ANS: E DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Octagon

 21. ANS: F DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Polygon

 22. ANS: C DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Area

 23. ANS: D DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.1 STO: Mea-7m28 TOP: Measurement

KEY: Perimeter

 24. ANS: F DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.2 STO: Mea-7m28 TOP: Measurement

KEY: Height

 25. ANS: G DIF: Level 1 REF: Knowledge/Understanding

OBJ: Section 1.2 STO: Mea-7m28 TOP: Measurement

KEY: Area, Parallelogram

 26. ANS: H DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 1.5 STO: Mea-7m28 TOP: Measurement

KEY: Vertex

 27. ANS: A DIF: Level 2 REF: Knowledge/Understanding

OBJ: Section 1.7 STO: Mea-7m28 TOP: Measurement

KEY: Composite Shape

**SHORT ANSWER**

 28. ANS:

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Length** | **Width** | **Perimeter** |
| a) | 9 m | 3 m | 24 m |
| b) | 4.5 cm | 6.6 cm | 22.2 cm |
| c) | 35 mm | 50 mm | 170 mm |
| d) | 12 cm | 6 cm | 36 cm |
| e) | 7.5 m | 6.5 m | 28 m |

DIF: Level 2 REF: Application OBJ: Section 1.1 STO: Mea-7m28

TOP: Measurement KEY: Perimeter

 29. ANS:

|  |  |  |
| --- | --- | --- |
| **Shape** | **Side Length (cm)** | **Perimeter (cm)** |
| Triangle | 3.3, 4.5, 1.8 |  9.6 |
| Quadrilateral | 4.4, 2.8, 3.9, 5.0 | 16.1 |
| Square | 6.6 | 26.4 |
| Rectangle | 5.2, 7.4 | 25.2 |
| Parallelogram | 2.8, 4.9 | 15.4 |
| Regular pentagon | 3.6 | 18.0 |
| Isosceles trapezoid | 0.8, 2.3, 3.2, 3.2 |  9.5 |
| Regular hexagon | 7.8 | 46.8 |

DIF: Level 2 REF: Application OBJ: Section 1.1 STO: Mea-7m30

TOP: Measurement KEY: Perimeter

 30. ANS:

Either one of the following:

• Add the side lengths together.

*P* = s + *s* + *s* + *s* + *s* + *s* + *s* + *s*

• Multiply the side length by 8.

*P* = 8*s*

DIF: Level 2 REF: Communication OBJ: Section 1.1

STO: Mea-7m28 TOP: Measurement KEY: Perimeter

 31. ANS:

a) The shape is a rectangle.

b) *P* = 2  (7.5 cm + 5 cm)

*P* = 25 cm

The perimeter is 25 cm.

c) *A* = *l*  *w*

*A* = 7.5 cm  5 cm

*A* = 37.5 cm2

DIF: Level 3 REF: Application OBJ: Section 1.1 STO: Mea-7m30

TOP: Measurement KEY: Area, Perimeter

 32. ANS:

The perimeter of the triangle is

1.9 m  3 = 5.7 m

The perimeter of the square is

1.4 m  4 = 5.6 m

The triangle has the greater perimeter.

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 1.1

STO: Mea-7m28 TOP: Measurement KEY: Perimeter

 33. ANS:

*P* = 2  10 + 2  16

*P* = 52

52 m  $45/m = $2340

The cost of fencing will be $2340.

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 1.1

STO: Mea-7m28 TOP: Measurement KEY: Perimeter

 34. ANS:

If two triangles have the same perimeter, they may not have the same area.

The following triangles have the same perimeter but different areas.



DIF: Level 3 REF: Communication OBJ: Section 1.3

STO: Mea-7m28 TOP: Measurement KEY: Area

 35. ANS:

(14 + 8) – 3  2 + 10 ÷ 5 = 18

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 1.4

STO: NSN-7m3 TOP: Number Sense and Numeration KEY: BODMAS

 36. ANS:

Trapezoids will vary. A possible answer is

*a* = 15 cm

*b* = 8 cm

*h* = 4 cm

As the dimensions of the other two sides will vary, the perimeter of the trapezoid will also vary. It is the total distance around the outside of the trapezoid.

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 1.5

STO: Mea-7m30 TOP: Measurement KEY: Trapezoid

 37. ANS:

To find the area:

1) split the shape into simpler shapes

2) find the area of each shape

3) add the areas of all the shapes to find the total area

To find the perimeter:

1) find the total distance around the outside of the composite shape

DIF: Level 3 REF: Communication OBJ: Section 1.7

STO: Mea-7m30 TOP: Measurement KEY: Composite Shape

**PROBLEM**

 38. ANS:

Apply the triangle area formula to find the height.

*A* = *b*  *h* ÷ 2

72 = 6  *h* ÷ 2

*h* = 24

The height of the triangle is 24 m.

DIF: Level 4 REF: Thinking/Inquiry/Problem Solving OBJ: Section 1.3

STO: Mea-7m30 TOP: Measurement KEY: Triangle

 39. ANS:

The shape of the trapezoid will vary, but the top side *a* should measure 3 cm.

****

DIF: Level 3 REF: Thinking/Inquiry/Problem Solving OBJ: Section 1.6

STO: Mea-7m30 TOP: Measurement KEY: Trapezoid

 40. ANS:

Designs will vary. A possible design is:



Area of triangle:

*A* = *b*  *h* ÷ 2

*A* = 30  20 ÷ 2 = 300

Area of trapezoid:

*A* = (*a* + *b*)  *h* ÷ 2

*A* = (6 + 30)  16 ÷ 2 = 288

Total area = 300 + 288 = 588

Perimeter = 25  2 + 20  2 + 6 = 96

DIF: Level 4 REF: Thinking/Inquiry/Problem Solving OBJ: Section 1.7

STO: Mea-7m30 TOP: Measurement KEY: Composite Shape