

SAMPLE CHAPTER TEST

Name: _____ Date: _____

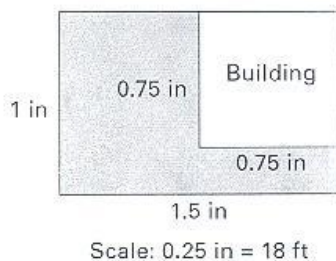
Part A: Multiple Choice

Choose the best response to each of the following questions

- A roll of vinyl flooring costs \$30.00 a square metre. How much would you need to spend to cover a floor that is 5 m by 8 m?
 a) \$40.00 b) \$1200.00 c) \$780.00 d) \$390.00
- A landscaper is laying weed barrier cloth on a section of a garden that is 15 ft by 21 ft. The weed barrier cloth is sold by the square yard. How many square yards of weed barrier cloth will she need?
 a) 35 yd² b) 315 yd² c) 675 yd² d) 2835 yd²
- Your dining room measures 7.5 m by 9 m. You have found the perfect carpet for the room, but it is sold in square yards. One yard equals 0.9144 metres. How many square yards of carpet do you need?
 a) 67.5 yd² b) 61.72 yd² c) 80.688 yd² d) 90.25 yd²
- You have purchased a 5-gallon fish tank from an American online store. One US gallon equals 3.7854 litres. How many litres of water will you need to fill the tank?
 a) 18.9270 L b) 1.0998 L c) 0.4539 L d) 9.5461 L
- A potato chip manufacturer packages chips in a cylindrical cardboard container with a diameter of $3\frac{1}{8}$ " and a height of $9\frac{1}{8}$ ". How much cardboard is needed to make one container, without the top and bottom?
 a) 28.58 in² b) 109.53 in² c) 18.37 in² d) 89.58 in²

Part B: Short Answer

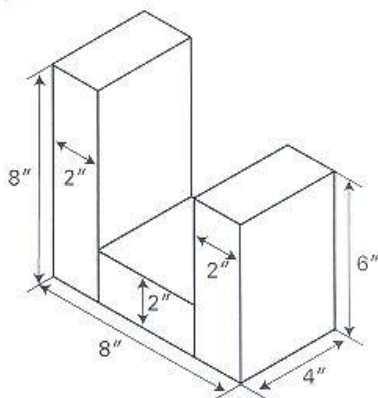
- The diagram below represents a scale drawing of Diana's business property. She needs to purchase rock salt to melt the ice on the parking lot (shaded area) around her building. One bag of rock salt will cover 1500 square feet. How many bags of rock salt does Diana need to purchase to salt the entire parking lot?



7. Ethan is writing an estimate for a client who would like a patio built from interlocking bricks. The landscaper has provided two designs that would fit in the yard: Plan 1 is for a patio 3 yards long and 4 yards wide. Plan 2 is for a patio 5 yards long and 2.5 yards wide. The client wants to know how much each plan will cost. Ethan will use rectangular bricks that measure $8'' \times 4''$ and cost \$5.00 a square foot. Ethan's labour charge is \$8.50 per square foot. Which plan should the client choose?
8. A cabinet maker is repairing the laminate edging of a set of circular wood tables. The coffee table has a diameter of 28" and the two end tables each have a diameter of 16". If one 8-foot roll of laminate costs \$8.89, how much will it cost to replace the edging on all three tables?
9. A party planner is designing a conical canvas tent for a child's birthday party. The tent has no floor, and it has a radius of 3 ft, a perpendicular height of 4 ft, and a slant height of 5 ft. If canvas sells for \$23.00/yd², how much will the material cost?
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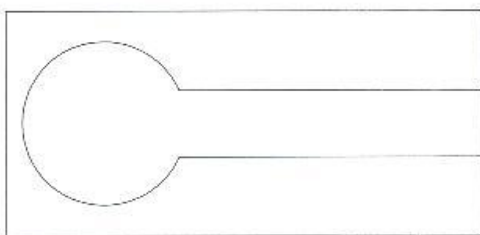
10. Two cylindrical flower pots need to be painted. The flower pots are $1\frac{1}{2}$ ft in diameter and $2\frac{1}{2}$ ft high. A 1 l. can of paint covers 100 ft^2 . Will one can be enough to paint the two flower pots with two coats of paint?

11. Matthew was hired to produce 25 pairs of plastic bookends using the dimensions shown in the diagram below. The bookends will be constructed using an injection mould. Determine the cost of 25 pairs of bookends if the cost of plastic is \$15.25 a cubic foot.



Part C: Extended Answer

12. Elise is a homeowner who wishes to redesign her backyard. She wants to have a circular patio and a rectangular walkway made from pavement. The surrounding area will be lawn. The backyard is to be laid out as shown below.



The total length of the backyard is 25 yards and the width is 9 yards.

- a) The diameter of the circular patio is 7 yards. Calculate the area of the patio.
- b) The rectangular walkway is 17 yards long and 2 yards wide. Calculate the area of the walkway.
- c) The cost of the paved area is \$25.00 a square yard. Find the total cost of the pavement.
- d) The cost of the lawn area is \$8.00 a square yard. Find the total cost of the lawn.
- e) How much will it cost Elise to redesign her backyard?
-

SAMPLE CHAPTER TEST: SOLUTIONS

Part A: Multiple Choice

1. b) \$1200.00

$$\text{Area: } 5 \text{ m} \times 8 \text{ m} = 40 \text{ m}^2$$

$$40 \text{ m}^2 \times \$30.00/\text{m}^2 = \$1200.00$$

2. a) 35 yd
- ²

$$15 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}} = 5 \text{ yd}$$

$$21 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}} = 7 \text{ yd}$$

$$\text{Area: } 5 \text{ yd} \times 7 \text{ yd} = 35 \text{ yd}^2$$

3. c) 80.688 yd
- ²

$$7.5 \text{ m} \times \frac{1 \text{ yd}}{0.9144 \text{ m}} = 8.20 \text{ yd}$$

$$9 \text{ m} \times \frac{1 \text{ yd}}{0.9144 \text{ m}} = 9.84 \text{ yd}$$

$$\text{Area: } 8.20 \text{ yd} \times 9.84 \text{ yd} = 80.688 \text{ yd}^2$$

4. a) 18,9270 l.

$$\frac{3.7854 \text{ l.}}{1 \text{ gal}} = \frac{x \text{ l.}}{5 \text{ gal}}$$

$$(5 \text{ gal}) \frac{3.7854 \text{ l.}}{1 \text{ gal}} = 18.9270 \text{ l.}$$

5. d) 89.58 in
- ²

$$SA = 2\pi rh$$

$$SA = 2\pi(3.125 + 2)(9.125)$$

$$SA = 89.58 \text{ m}^2$$

Part B: Short Answer

6. Convert the dimensions to feet using the scale
-
- 0.25 in equals 18 ft.

Entire property (large rectangle) is
72 ft \times 108 ft.

Building (small square) is 54 ft \times 54 ft.

Shaded area = large rectangle area – small
rectangle area

$$\text{Shaded area} = (72 \text{ ft} \times 108 \text{ ft}) - (54 \text{ ft} \times 54 \text{ ft})$$

$$\text{Shaded area} = 7776 \text{ ft}^2 - 2916 \text{ ft}^2 = 4860 \text{ ft}^2$$

$$\text{Bags of salt: } \frac{4860 \text{ ft}^2}{1500 \text{ ft}^2} = 3.24$$

She needs to buy 4 bags of salt.

7. Plan 1:

$$3 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} = 9 \text{ ft}$$

$$4 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} = 12 \text{ ft}$$

$$\text{Area: } 9 \text{ ft} \times 12 \text{ ft} = 108 \text{ ft}^2$$

$$\text{Cost labour: } 108 \text{ ft}^2 \times \$8.50/\text{ft}^2 = \$918.00$$

$$\text{Cost bricks: } \$5.00/\text{ft}^2 \times 108 \text{ ft}^2 = \$540.00$$

$$\text{Total cost: } \$540.00 + \$918.00 = \$1458.00$$

Plan 2:

$$2.5 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} = 7.5 \text{ ft}$$

$$5 \text{ yd} \times \frac{3 \text{ ft}}{1 \text{ yd}} = 15 \text{ ft}$$

$$\text{Area: } 15 \text{ ft} \times 7.5 \text{ ft} = 112.5 \text{ ft}^2$$

$$\text{Cost labour: } 112.5 \text{ ft}^2 \times \$8.50/\text{ft}^2 = \$956.25$$

$$\text{Cost bricks: } \$5.00/\text{ft}^2 \times 112.5 \text{ ft}^2 = \$562.5$$

$$\text{Total cost: } \$540.00 + \$918.00 = \$1518.75$$

The client should choose Plan 1.

8. Convert the diameter of the coffee table from
-
- inches to feet.

$$28 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} = 2.33 \text{ ft}$$

Find the circumference of the coffee table.

$$C = \pi d$$

$$C = \pi(2.33)$$

$$C = 7.33 \text{ ft}$$

Convert the diameter of the end table from
inches to feet.

$$16 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} = 1.33 \text{ ft}$$

Find the circumference of the end table.

$$\begin{aligned}C &= \pi d \\C &= \pi(1.33) \\C &= 4.19 \text{ ft}\end{aligned}$$

Add the circumferences to find the total length of laminate needed.

$$7.33 + 4.19 + 4.19 = 15.71$$

One roll of laminate is 8 ft long, so the cabinet maker will buy two rolls.

$$2 \times \$8.89 = \$17.78$$

The laminate will cost \$17.78.

9. $SA = \pi rs$

$$SA = \pi \left(3 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}} \right) \left(5 \text{ ft} \times \frac{1 \text{ yd}}{3 \text{ ft}} \right)$$

$$SA = 5.24 \text{ yd}^2$$

The planner would need to buy whole yards.

$$6 \text{ yd}^2 \times \$23.00 \text{ per yd}^2 = \$138.00$$

10. Surface area of a cylinder (base and side, the top is open):

$$SA = \pi dh + \pi r^2$$

$$SA = \pi(1.5)(2.5) + \pi(0.75)^2$$

$$SA = 11.8 \text{ ft}^2 + 1.8 \text{ ft}^2$$

$$SA = 13.6 \text{ ft}^2$$

Amount of paint needed for 2 coats on one pot:

$$2 \times 13.6 \text{ ft}^2 = 27.2 \text{ ft}^2$$

$$2 \text{ pots} = 54.4 \text{ ft}^2$$

Yes, one can of paint is enough for the two pots.

11. Volume of bookend:

$$V_1 = lwh$$

$$V_1 = \left(2 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right) \left(8 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right) \left(4 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right)$$

$$V_1 = 0.037 \text{ ft}^3$$

$$V_2 = \left(2 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right) \left(4 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right) \left(4 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right)$$

$$V_2 = 0.019 \text{ ft}^3$$

$$V_3 = \left(2 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right) \left(4 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right) \left(6 \text{ in} \times \frac{1 \text{ ft}}{12 \text{ in}} \right)$$

$$V_3 = 0.028 \text{ ft}^3$$

$$V_{\text{total}} = V_1 + V_2 + V_3$$

$$V_{\text{total}} = 0.037 \text{ ft}^3 + 0.019 \text{ ft}^3 + 0.028 \text{ ft}^3$$

$$V_{\text{total}} = 0.084 \text{ ft}^3$$

Cost:

$$(25 \times 2)(0.084 \text{ ft}^3)(\$15.25/\text{ft}^3) = \$64.05$$

Part C. Extended Answer

12. a) Area of patio = πr^2

$$\text{Area of patio} = \pi(3.5)^2$$

$$\text{Area of patio} = 38.48 \text{ yd}^2$$

b) Area of walkway = lw

$$\text{Area of walkway} = 17 \text{ yd} \times 2 \text{ yd}$$

$$\text{Area of walkway} = 34 \text{ yd}^2$$

c) $38.48 \text{ yd}^2 + 34 \text{ yd}^2 = 72.48 \text{ yd}^2$

Cost of the paved area:

$$\$25.00/\text{yd}^2 \times 72.48 \text{ yd}^2 = \$1812.00$$

d) Find the area of the backyard.

$$A = lw$$

$$A = 25 \text{ yd} \times 9 \text{ yd}$$

$$A = 225 \text{ yd}^2$$

Subtract the area of the pavement.

$$225 \text{ yd}^2 - 72.48 \text{ yd}^2 = 155.52 \text{ yd}^2$$

Cost of the lawn area:

$$\$8.00/\text{yd}^2 \times 155.52 \text{ yd}^2 = \$1220.16$$

e) Total cost:

$$\$1812.00 + \$1220.16 = \$3032.16$$