Topics to review:

- Properties of quadrilaterals

Problem 1

A quadrilateral is any closed shape that has 4 sides.

(A) True

(B) False

A parallelogram is a quadrilateral with 2 pairs of parallel sides.

(A) True

(B) False

A triangle is a quadrilateral.

(A) True

(B) False

This shape is a trapezoid and a quadrilateral.

(A) True

(B) False

A rectangle is also a rhombus.

(A) True

(B) False

A square is also a rectangle.

(A) True

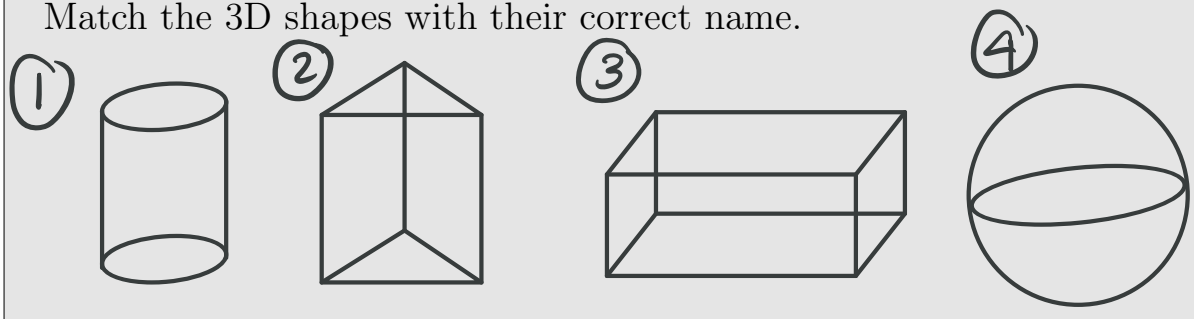
(B) False

Topics to review:

- Recognizing common 3D shapes

Problem 2

Match the 3D shapes with their correct name.



- Sphere
- Cylinder
- Rectangular Prism
- Triangular Prism

Topics to review:

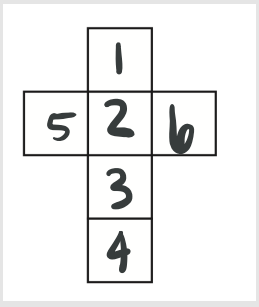
- Nets - 2D representations of 3D shapes

"nets" the 2D representation

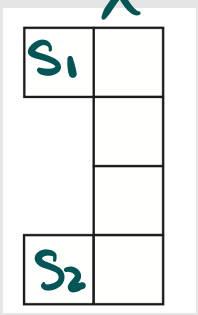
Problem 3

Which nets will fold to make a cube?

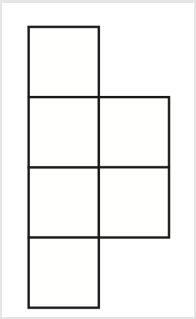
1 ✓



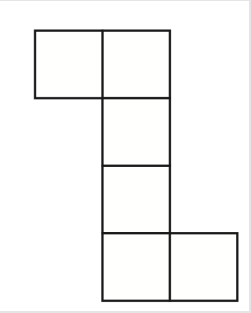
2 ✗



3

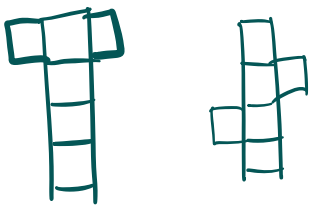


4 ✓



Draw another version of a net that will fold to make a cube (that is not shown above).

6 surfaces in a cube



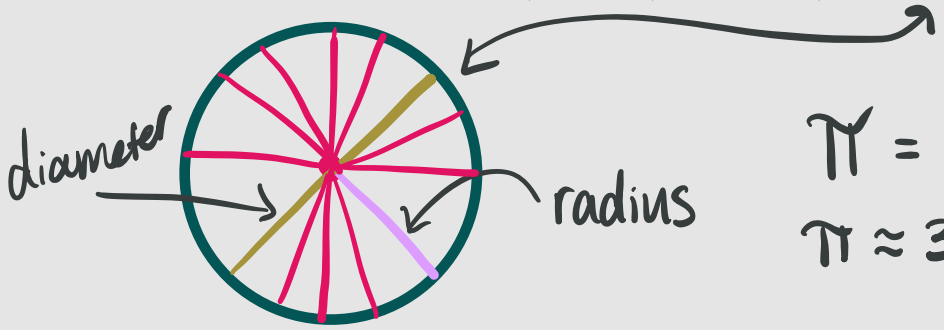
Pattern: 4 squares down the center, and a single square on each side

Topics to review:

- Circles - center, radius, diameter, and circumference

Problem 4

Draw a circle and label the center, radius, diameter, and circumference.



$\pi = 3.14\ldots$

$\pi \approx 3.14$

Answer the following questions about circles:

(1) The length of the outer part of a circle is called the: Circumference

*(2) The distance from the center to the outer part is called the: Radius

(3) If the radius of a circle is length 9, what is the length of the diameter? 18

(4) If we are given the length of the diameter, which operation can we apply to get the length of the radius? Take half of the diameter

(5) How many radii (plural of radius) does a circle have?

Infinitely Many!

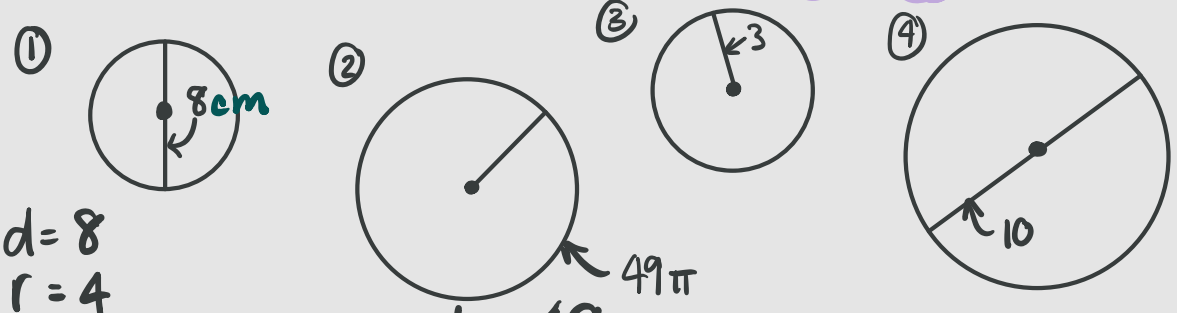
$\frac{1}{2} * 18 = 9$

Problem 5

$C = 2\pi r$ r d C

What is the radius, diameter, and circumference of each of the circles?

Note: Circumference equals 2π times the radius $(C=2\pi r)$.



① $d = 8$, $r = 4$

$C = 2\pi r = 2\pi 4 = 2 \cdot 4 \cdot \pi$

② $d = 49$, $r = 24.5$, $C = 49\pi$

$\sqrt{49} = 7$

$= 8 \cdot \pi$ ~25 cm

$= \boxed{8}\pi$ * Apprex. how many cm is C? "not in terms of pi"

"Left in terms of pi" → Answer is going to have π in it

③ $d = 6$

$r = 3$

$C = 6\pi = 3 \cdot 2 \cdot \pi$

$d = 2r$, $r = \frac{d}{2} = d \cdot \frac{1}{2}$

$\frac{d}{2} = \frac{2r}{2} = 1 \cdot r = r$

[Apply the inverse operation
Mult/Div Add/Sub]

$\frac{d}{2} = r$

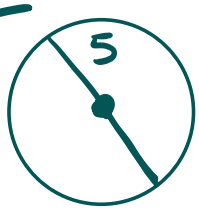
$2 \cdot \frac{d}{2} = r \cdot 2$

$d = r2$

* If given the diameter, how can we find the circumference? Note: $C = 2\pi r$, $r = \frac{d}{2}$, $d = r2$

$r = \frac{C}{2\pi}$

EX:



$d = 5$

$C = 5\pi$

Surface Area of a Circle

$C = 2\pi r$

$$A = \pi r^2$$

$r = 3$

$A = \pi r^2$, $r = 3$

What is A in terms of π

$r^2 = 3^2 = 3 \cdot 3 = 9$

$A = \pi r^2 = \pi 9 = 9\pi$

$r^{10} = \underbrace{r \cdot r \cdots r \cdot r}_{10 \text{ times}}$

$[r^2 = r \cdot r]$

$r^5 = r \cdot r \cdot r \cdot r \cdot r$

$r = 3$

$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 = 243$

* Exponents
" r squared "
" r raised to the second power "

{ r - base
2 - power }

base is r
power is 4 → $r^4 = r \cdot r \cdot r \cdot r$

* Square roots

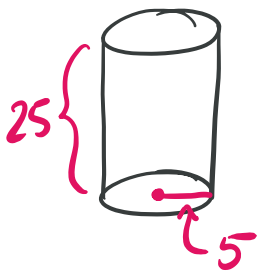
Volume of Cylinder

$$V = \pi r^2 h$$

Area of Circle $A = \pi r^2$

Cylinder → 2 circles and a rectangle

Ex: $r = 5$



$V = ?$ $h = 25$

$r = 5$

$V = \pi r^2 h$

$= \pi 5^2 25$

$= \pi 25 \cdot 25$

$= 625\pi$

$5^2 = 5 \cdot 5 = 25$

3/14 ≈ 3.14 pi day!

$A = \pi r^2$

Volume of a Sphere

$$V = \frac{4}{3}\pi r^3$$

$$\frac{4}{3} = 1\frac{1}{3}$$

"Improper fraction"
to
"Mixed Number"

$$\frac{7}{3} = 2\frac{1}{3}$$

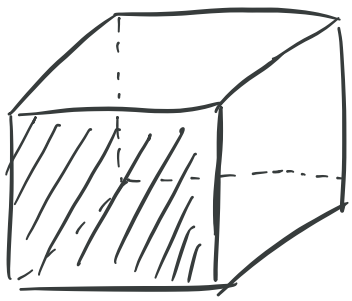
$2 \times 3 = 6$

$7 - 6 = 1 \rightarrow$ Top

$$4\frac{2}{5} = \frac{22}{5}$$

Mult. denom. by the whole #, then add the top # → New top #

- Cube -



$6\frac{5}{8}$ in

- 6 surfaces, all squares
- Area of one of the squares $A = l \cdot w$

$$A = l \cdot w = 6\frac{5}{8} \cdot 6\frac{5}{8}$$

- Convert to improper fraction, then mult.

$$6\frac{5}{8} = \frac{53}{8}$$

$$A = \frac{53}{8} \cdot \frac{53}{8} = \frac{2809}{64}$$

$\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$

$\frac{1}{2} + \frac{1}{4}$

$\frac{1}{2} \cdot 6 = 3 = \frac{1}{2} \cdot \frac{6}{1}$

$$\text{Surface Area} = 6 \cdot \frac{2809}{64}$$

Volume of the cube $V = l \cdot l \cdot l = l^3$

$$\frac{2809}{64} \cdot \frac{53}{8} = \frac{2809 \cdot 53}{64 \cdot 8} \qquad l = \frac{53}{8}$$