Subject	Year	Month	
Mathematics	8	April	**Balcarras** *From strength to strength*

Topic:

CIRCLES AND CYLINDERS

7 LESSONS

Content (Intent)

Prior Learning

Y7 April:
- Perimeter
- Area of square, rectangle, parallelogram, triangle, trapezium
- Surface area of cube and cuboids
- Volume of cuboids

Future Learning

Y9 (Jan) : area of sectors, arc length, surface area of cylinder.

Objectives

- Know circle **definitions** and properties, including: centre, radius, chord, diameter, circumference
- Understand the difference between **exact** answer (in terms of pi) and **rounded** answers.
- Calculate the **circumference** of a circle when radius or diameter is given
- Calculate the **area** of a circle when radius or diameter is given
- Calculate the **perimeter** and area of composite shapes that include sections of a circle (semi / quarter)
- Calculate the **volume** of a cylinder

For teaching purposes

POSSIBLE QUESTIONS

- Convince me C = 2πr = πd.

- What is wrong with this statement? How can you correct it?

  The A of a circle with radius 7 cm is appr. 441 cm^2 because $(3 \times 7)^2$ = 441.

- Convince me the area of a semi-circle = $\frac{\pi d^2}{4}$

- Name a right prism. And another. And another …

POSSIBLE MISCONCEPTIONS

- Convince me that a cylinder is not a prism

- may work out $(\pi \times radius)^2$ when finding the area of a circle

- may use the sloping height when finding cross-sectional areas that are parallelograms, triangles or trapezia

- may think that the area of a triangle = base × height

- may think that you multiply all the numbers to find the volume of a prism

- may confuse the concepts of surface area and volume

Pedagogical notes (implementation)

C = πd can be established by investigating the ratio of the circumference to the diameter of circular objects (wheel, clock, tins, glue sticks, etc.) Pupils need to understand this formula in order to derive A = πr².

A prism is a solid with constant polygonal cross-section. A right prism is a prism with a cross-section that is perpendicular to the 'length'.

Notation
π
units: km, m, cm, mm, mm², cm², m², km², mm³, cm³, km³

How will understanding be assessed & recorded (Impact)

End of Year Assessment in June
8BAM12 Circles

How can parents help at home?

MathsWatch clips (Qualification KS3)
G2, G22a, G22b
G25a (only cylinder bit)

Further reading/discussion

Reading / Enrichment

KM: Circle connections, Circle connections v2
KM: Circle circumferences, Circle problems
KM: Circumference searching
KM: Maths to Infinity: Area and Volume
KM: Stick on the Maths: Circumference and area of a circle
KM: Stick on the Maths: Right prisms
NRICH: Blue and White
NRICH: Efficient Cutting
NRICH: Cola Can

Literacy

Circle
Centre
Radius, diameter, chord, circumference
Pi
(Right) prism
Cross-section
Cylinder
Polygon, polygonal
Solid

Numeracy Links

Careers Links

Groundsperson
Certified Race Measurer
Pizza Chef