GRADE 5 LEARNING PACK

# Network Routes & Optimisation

Represent connected locations as a network and compare routes using weighted costs such as distance or time.

**LEARN • PRACTISE • CREATE • REFLECT**

Original BrightPencil Kids resource - adult-led where appropriate

A4 edition • 12 purposeful pages • review copy

**Print. Learn. Grow.**

FOR PARENTS & TEACHERS

# Grown-up guide

### Learning objective

Represent connected locations as a network and compare routes using weighted costs such as distance or time.

## Use this pack well

- Model the first example aloud, then let the learner try.
- Ask “How do you know?” more often than “Are you finished?”.
- Use real objects, talk, movement or observation when the activity suggests it.
- Stop or shorten the session if attention or enjoyment drops.
- Open-ended pages can have many successful answers.

### Quality note

This resource was written originally for BrightPencil Kids. Curriculum sources informed scope and progression only; no third-party worksheet or story text is reproduced.

STUDY

# Learn the idea

1 **Networks have nodes and connections.**

2 **A connection can carry a weight such as distance, time or cost.**

3 **The best route depends on which weight or constraint matters.**

**Talk about it**

Explain one idea in your own words. Give an example from real life, a drawing or an object if that helps.

PRACTISE

# Guided practice

### Challenge 1

Build a clear model or organiser that shows: Networks have nodes and connections.

### Challenge 2

Use supplied evidence to test this idea: A connection can carry a weight such as distance, time or cost.

PRACTISE

# Build the skill

### Challenge 3

Compare two cases and explain where this principle matters: The best route depends on which weight or constraint matters.

### Challenge 4

Find one weak claim or assumption and revise it so it matches the evidence.

PRACTISE

# Independent thinking

**Challenge 5**

Write a short conclusion that states evidence, limitation and next question.

APPLY

# Try it beyond the page

## Real-world / hands-on connection

Solve a fictional five-node route problem using distance weights.

### Before you finish

**What did you notice?**

**What evidence, object or example helped you?**

**What would you change if you tried again?**

CREATE

# Create something

### Your project

**Create a network with one closed route and compare shortest-distance versus shortest-time paths.**

Use this space for planning, drawing, mapping, designing or notes.

CHALLENGE

# Think deeper

**1. What is a node?**

**2. Can the shortest-distance route have the longest time?**

**3. Why state the optimisation goal?**

REVIEW

# Quick review

1. In one sentence, explain the big idea of “Network Routes & Optimisation”.

2. Draw or write one example that shows you understand.

3. Choose one activity from this pack and explain the strategy you used.

4. Write one question you still have.

FOR GROWN-UPS

# Answer & discussion notes

Use these as guidance, not scripts. Open questions can have different successful responses when the reasoning is sensible and evidence-based.

**1. Suggested response**

A point/location in a network.

**2. Suggested response**

Yes.

**3. Suggested response**

Different goals can produce different best routes.

**Review before publication**

Check age fit, factual accuracy, clarity, accessibility, rights provenance and whether the activity works in practice. This file remains a review copy until those checks are signed off.

FINISH

# My learning reflection

**I finished this BrightPencil learning pack.**

**One thing I understand better now:**

**A strategy that helped me:**

**Something I created or noticed:**

**My next small question or goal:**

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