Co-operative Logic Cards

Notes for teacher: When students produce an answer ask them to check:

1. How have you organised all the information?
2. Is this a reasonable height for a chimney, kite, etc?
3. Are the units and degree of accuracy appropriate?

The school chimney This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** What is the height of the chimney? *The bottom quarter of the chimney is painted red. The cosine of 20° is 0.940.*	**The school chimney** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** What is the height of the chimney? *Jane is 153 cm tall, and she is 20 m from the chimney.*
The school chimney This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** What is the height of the chimney? *John is taller than Jane.* *The tangent of 20° is 0.364.*	**The school chimney** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** What is the height of the chimney? *The sine of 20° is 0.342. If John stands beside the chimney, he nearly reaches the top of the red part.*
The school chimney This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** What is the height of the chimney? *Jane has measured the angle of elevation from her eye level to the top of the chimney as 20°.*	

Co-operative Logic Cards

Notes for teacher: When students produce an answer ask them to check:

1. How have you organised all the information?
2. Is this a reasonable height for a chimney, kite, etc?
3. Are the units and degree of accuracy appropriate?

Manu tukutuku (The kite) This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high above the beach is the kite? *Ruka flies a kite he got for his birthday. Its string is 30 m long.*	**Manu tukutuku (The kite)** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high above the beach is the kite? *The kite string makes an angle of 40° with the sand. The wind is blowing from the south.*
Manu tukutuku (The kite) This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high above the beach is the kite? *Ruka ties the end of the string to a stake in the sand. The wind is strong enough to keep the kite stable in the air.*	**Manu tukutuku (The kite)** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high above the beach is the kite? *The beach is long and flat. It is almost 23m from the stake to directly underneath the kite.*
Manu tukutuku (The kite) This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high above the beach is the kite? *The shadow of the kite tail on the sand is twice as long as the kite tail.*	

Co-operative Logic Cards

Notes for teacher: When students produce an answer ask them to check:

1. How have you organised all the information?
2. Is this a reasonable height for a chimney, kite, etc?
3. Are the units and degree of accuracy appropriate?

The Flagpole This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How far apart are the pegs? *A six-metre-high flagpole stands on flat ground. The flagpole is made of wood.*	**The Flagpole** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How far apart are the pegs? *The guide wires are made of steel. Each guide wire is 4.88 m long.*
The Flagpole This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How far apart are the pegs? *The wires are attached to anchor points at the vertices (corners) of a regular hexagon. The anchor points are set in concrete.*	**The Flagpole** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How far apart are the pegs? *The flagpole is in the centre of a regular hexagon with anchor points at the corners. A New Zealand flag is flying.*
The Flagpole This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How far apart are the pegs? *The guide wires are attached to a point two metres from the top of the flagpole. They are attached with steel bolts.*	**The Flagpole** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How far apart are the pegs? *The angle of elevation between the ground and the top of the flagpole is nearly 65°.*

Co-operative Logic Cards

Notes for teacher: When students produce an answer ask them to check:

1. How have you organised all the information?
2. Is this a reasonable height for a chimney, kite, etc?
3. Are the units and degree of accuracy appropriate?

The Roof This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Find the pitch of the roof. *The walls of the house are white. The cross-section of the roof is an isosceles triangle.*	**The Roof** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Find the pitch of the roof. *The length of the house (in a straight line from corner to corner) is 16 m.*
The Roof This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Find the pitch of the roof. *The pitch is the angle that the roof makes with the horizontal of the ceiling.*	**The Roof** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Find the pitch of the roof. *The roof is painted blue. The area of the whole roof is 230.72 m2. The front door is red.*
The Roof This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Find the pitch of the roof. *The width of the house (in a straight line from corner to corner) is 12 m. All the windows are square.*	

Co-operative Logic Cards

Notes for teacher: When students produce an answer ask them to check:

1. How have you organised all the information?
2. Is this a reasonable height for a chimney, kite, etc?
3. Are the units and degree of accuracy appropriate?

The Plane This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high is the plane when it flies over Karima? *Karima watches an Air New Zealand plane take off from the airport.*	**The Plane** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high is the plane when it flies over Karima? *The plane flies in a straight line over Karima's head.*
The Plane This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high is the plane when it flies over Karima? *The plane climbs at an angle of 17° from the time it takes off until after it passes Karima's house.*	**The Plane** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high is the plane when it flies over Karima? *The end of the runway where the plane takes off is 5 km in a straight line from Karima's house.*
The Plane This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How high is the plane when it flies over Karima? *Karima's house is at the same height above sea level as the airport.*	

Co-operative Logic Cards

Notes for teacher: When students produce an answer ask them to check:

1. How have you organised all the information?
2. Is this a reasonable height for a chimney, kite, etc?
3. Are the units and degree of accuracy appropriate?

Fishing This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How deep is the water? *Sarah is fishing in her boat.* *The seabed is flat.*	**Fishing** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How deep is the water? *Sarah's fishing line is 26 m long from tip of the rod to the sinker.*
Fishing This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How deep is the water? *Sarah casts her line, and the sinker rests still on the seabed.*	**Fishing** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How deep is the water? *Sarah keeps tension on the line, so it stays straight with 2.8 m of it from the tip of her rod to the water.*
Fishing This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** How deep is the water? *Sarah's line makes an angle of 45° with the water surface.*	

Co-operative Logic Cards

Notes for teacher: When students produce an answer ask them to check:

1. How have you organised all the information?
2. Is this a reasonable height for a chimney, kite, etc?
3. Are the units and degree of accuracy appropriate?

The Lighthouse This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Is the yacht safe? *A yacht's Captain observes a lighthouse on a cliff. That's good because her GPS system is not working.*	**The Lighthouse** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Is the yacht safe? *From a chart the Captain knows the top of the lighthouse is 46 m above sea level.*
The Lighthouse This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Is the yacht safe? *There are reefs near this part of the coast. To be safe, yachts must stay at least 0.5 km from the lighthouse.*	**The Lighthouse** This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Is the yacht safe? *The Captain's sextant tells her that the angle of elevation from her horizontal eyeline to the top of the lighthouse is 5°.*
The Lighthouse This is your clue to help the group solve the problem. Read your clue aloud to the group. **PROBLEM:** Is the yacht safe? *The Captain's horizontal eye level is 380 cm above sea level.*	