# Number & Algebra

ACMNA123

## Mental strategies

① **Which pairs of numbers between 1 and 9 inclusive add up to 10?**

Note: **inclusive** means include both 1 and 9. There are four such pairs, not counting 5 + 5.

_____

**Circle the sets of juxtaposed numbers that add up to 10. There can be two or three numbers in a set. Find two sets of numbers in each row.**

Note: **juxtaposed** means 'side-by-side'.

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ② | 5 | 3 | 2 | 4 | 5 | 3 | 7 | 8 | 4 | 3 | 8 | 2 | 3 | 6 |
| ③ | 9 | 0 | 6 | 4 | 2 | 5 | 6 | 1 | 4 | 7 | 8 | 1 | 1 | 2 |
| ④ | 1 | 7 | 5 | 2 | 3 | 8 | 6 | 2 | 6 | 5 | 0 | 8 | 3 | 7 |
| ⑤ | 3 | 8 | 2 | 1 | 6 | 5 | 0 | 6 | 2 | 2 | 7 | 5 | 9 | 8 |
| ⑥ | 4 | 4 | 6 | 4 | 0 | 4 | 2 | 4 | 8 | 9 | 3 | 2 | 5 | 1 |
| ⑦ | 8 | 1 | 6 | 3 | 2 | 8 | 4 | 2 | 9 | 1 | 7 | 6 | 2 | 5 |
| ⑧ | 4 | 5 | 1 | 7 | 1 | 8 | 9 | 6 | 0 | 0 | 2 | 5 | 2 | 3 |
| ⑨ | 8 | 1 | 8 | 2 | 6 | 5 | 8 | 2 | 4 | 1 | 7 | 9 | 2 | 3 |
| ⑩ | 0 | 5 | 7 | 2 | 4 | 2 | 4 | 5 | 0 | 3 | 9 | 3 | 1 | 6 |
| ⑪ | 3 | 3 | 3 | 1 | 6 | 8 | 2 | 9 | 0 | 5 | 2 | 4 | 7 | 5 |
| ⑫ | 1 | 0 | 1 | 4 | 0 | 6 | 7 | 2 | 5 | 8 | 9 | 0 | 1 | 3 |
| ⑬ | 2 | 2 | 6 | 5 | 4 | 8 | 3 | 7 | 9 | 0 | 2 | 4 | 7 | 2 |
| ⑭ | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 7 | 8 | 9 | 0 | 1 |

⑮ **Which three sets of numbers between 1 and 9 inclusive add up to 10?**
***Hint*: there are four sets to choose from.**

_____ _____ _____

Score 2 points for each correct answer! SCORE /30 0-12 14-24 26-30

# Statistics & Probability

ACMSP145

## Chance experiments

**Write or circle the correct answers.**

① **Scientists conducted a chance experiment called X-Event.**
**They did the experiment five times.**
**The result was positive three times.**
**What is the probability that the next result will be positive?**

a $\frac{1}{5}$ c $\frac{5}{3}$
b $\frac{3}{5}$ d $\frac{1}{3}$

② **How sure can the scientists be that their estimation of the probability of the next result is accurate?**

a perfectly sure c fairly sure
b very sure d not sure

③ **Scientists conducted the chance experiment X-Event 50 times.**
**The result was positive 40 times.**
**What is the probability that the next result will be positive?**

a $\frac{1}{40}$ b $\frac{5}{4}$ c $\frac{4}{5}$ d $\frac{1}{50}$

④ **Can the scientists be more confident of their estimation of the probability after Question 3 than they were after Question 1? Answer yes or no and say why.**

_____

_____

⑤ **How sure can the scientists be that their estimation of the X-Event probability is accurate now?**

a perfectly sure c fairly sure
b very sure d not sure

⑥ **Scientists conducted the chance experiment X-Event 1000 times.**
**The result was positive 800 times.**
**What is the probability that the next result will be positive?**

a $\frac{1}{40}$ b $\frac{5}{4}$ c $\frac{4}{5}$ d $\frac{1}{50}$

⑦ **Can the scientists be more confident of their estimation of the probability now than they were after Question 1? Answer yes or no and say why.**

_____

_____

⑧ **How sure can the scientists be that their estimation of the X-Event probability is accurate after 10 000 tries?**

a perfectly sure c fairly sure
b very sure d not sure

Score 2 points for each correct answer! SCORE /16 0-6 8-12 14-16



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# Measurement & Geometry

ACMMG135

## Equivalent measurements

**Write or circle the correct answers.**

① **How many metres in 3.5 km?**

a 350 m c 35 000 m
b 3.500 m d 3500 m

② **How many centimetres in 3.5 metres?**

a 3.50 cm c 3500.0 cm
b 350 cm d 3500 cm

③ **How many millimetres in 6.5 centimetres?**

a 650 mm c 65 mm
b 60.5 mm d 6500 mm

④ **How many centimetres in 2.25 kilometres?**

a 225 cm c 22 500 cm
b 225 000 cm d 2250 cm

⑤ **How many millimetres in 1.5 metres?**

a 1500 mm c 150 000 mm
b 150 mm d 15 000 mm

⑥ **How many kilometres in 500 metres?**

a 5 km c 0.005 km
b 0.05 km d 0.5 km

⑦ **How many kilometres in 7250 metres?**

a 72.5 km c 7.25 km
b 7.205 km d 7.025 km

⑧ **Seventeen and a quarter kilometres is the same as which of the following?**

a 17.14 km c 17.4 km
b 17.25 km d 17.025 km

⑨ **Three and three quarters centimetres is the same as which of the following?**

a 3.75 cm c 3.075 cm
b 37.5 cm d 3.705 cm

⑩ **How many grams in 4.85 kilograms?**

a 485 g c 48 500 g
b 48.5 g d 4850 g

⑪ **How many milligrams in 1.55 kilograms?**

a 150.50 mg c 155 000 mg
b 1550 mg d 1 550 000 mg

⑫ **How many kilograms in 4736 grams?**

a 0.4736 kg c 47.36 kg
b 473.6 kg d 4.736 kg

⑬ **How many milligrams in 1.2 kilograms?**

a 120 000 mg c 1 200 000 mg
b 12 000 mg d 120 000 000 mg

⑭ **How many millilitres in 2.34 litres?**

a 2340 mL c 234.0 mL
b 234 mL d 234 000 mL

⑮ **How many millilitres in 1 cubic centimetre (1 $cm^3$)?**

a 10 mL c 100 mL
b 1 mL d 1000 mL

Score 2 points for each correct answer! SCORE /30 0-12 14-24 26-30

# Problem Solving

ACMNA123, ACMMG135

**Circle the sets of three numbers that add up to 20. There could be more than one set in a row.**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ① | 2 | 7 | 13 | 0 | 9 | 4 | 12 | 3 | 16 | 5 | 17 |
| ② | 17 | 2 | 9 | 13 | 8 | 2 | 6 | 12 | 4 | 1 | 14 |
| ③ | 6 | 6 | 0 | 17 | 9 | 11 | 3 | 1 | 16 | 8 | 3 |
| ④ | 14 | 7 | 6 | 9 | 5 | 8 | 2 | 11 | 9 | 3 | 8 |
| ⑤ | 1 | 18 | 1 | 14 | 2 | 4 | 9 | 7 | 4 | 13 | 0 |

⑥ An ant walked straight across a sheet of paper, taking steps that were 0.5 mm long.
It took the ant 400 steps to make the journey. Then it turned around and made the trip back.
In total, how many centimetres did the ant walk?

_____

⑦ A worker ant weighs 5 milligrams and it can lift 500 times its own weight. How much can the worker ant lift? Answer in grams.

_____

⑧ Hans shared a 1 litre bottle of orange juice equally between himself and three of his friends. How much juice did each of them get? Answer in millilitres.

_____



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