

THT WORKSHEETS

Learn With the Solutions

Australian Curriculum

Year 5 Mathematics

Number Sense & Mental Strategies

These solutions are designed to help students understand the thinking behind each method—not simply check whether an answer is correct.

1.

Understanding the Question

These calculations are designed to test whether you can recognise an efficient strategy instead of automatically using a long written method.

a) $198 + 347$

198 is close to 200.

Add 200 first:

$$200 + 347 = 547$$

We added 2 too many because 198 is 2 less than 200.

$$547 - 2 = 545$$

Final Answer: 545

Key Idea

When a number is close to a multiple of 10 or 100, compensation can make the calculation quicker.

b) 25×36

The number 25 is useful because:

THT.

$$25 \times 4 = 100$$

Rewrite 36 as:

$$36 = 4 \times 9$$

Now calculate:

$$\begin{aligned} 25 \times 36 \\ &= 25 \times 4 \times 9 \\ &= 100 \times 9 \\ &= 900 \end{aligned}$$

Final Answer: 900

Quick Tip

When multiplying by 25, look for a factor of 4. Four groups of 25 make 100.

c) $4,998 + 2,003$

4,998 is close to 5,000.

One efficient method is to compensate:

$$5,000 + 2,003 = 7,003$$

Because 4,998 is 2 less than 5,000:

$$7,003 - 2 = 7,001$$

Final Answer: 7,001

d) $1,200 \div 24$

Think of the related multiplication fact:

$$24 \times 5 = 120$$

Therefore:

$$24 \times 50 = 1,200$$

So:

$$1,200 \div 24 = 50$$

Final Answer: 50

Common Mistake

Do not stop at 5 after recognising that $24 \times 5 = 120$. The dividend is 1,200, which is ten times larger.

2.

Understanding the Question

Estimation gives us a quick idea of what the answer should be. We can then compare the estimate with the exact answer to check whether our calculation is reasonable.

a) $398 + 607$

Round each number to the nearest hundred:

$$398 \approx 400$$

$$607 \approx 600$$

Estimated answer:

$$400 + 600 = 1,000$$

Now calculate exactly:

$$398 + 607 = 1,005$$

The estimate is 5 less than the exact answer.

Estimate: 1,000

Exact Answer: 1,005

The estimate is an underestimate.

b) 51×19

Round to convenient numbers:

$$51 \approx 50$$

$$19 \approx 20$$

Estimated answer:

$$50 \times 20 = 1,000$$

Now calculate exactly.

THT.

One efficient method is:

$$\begin{aligned} & 51 \times 19 \\ &= 51 \times (20 - 1) \\ &= 1,020 - 51 \\ &= 969 \end{aligned}$$

The estimate is 31 greater than the exact answer.

Estimate: 1,000

Exact Answer: 969

The estimate is an overestimate.

Which estimate was closer?

For part a:

$$1,005 - 1,000 = 5$$

For part b:

$$1,000 - 969 = 31$$

Because 5 is smaller than 31, the estimate for part a was closer.

Final Answer: The estimate for $398 + 607$ was closer.

3.

Understanding the Question

All four numbers have the same thousands digit, so we must compare the hundreds, tens and ones digits.

The numbers are:

3,502

3,250

3,520

3,205

Start with the hundreds digits:

THT.

- 3,205 and 3,250 have 2 hundreds.
- 3,502 and 3,520 have 5 hundreds.

Therefore, the numbers beginning with 3,2__ are smaller.

Compare 3,205 and 3,250:

- Both have 2 hundreds.
- 3,205 has 0 tens.
- 3,250 has 5 tens.

So:

$$3,205 < 3,250$$

Now compare 3,502 and 3,520:

- Both have 5 hundreds.
- 3,502 has 0 tens.
- 3,520 has 2 tens.

So:

$$3,502 < 3,520$$

Final Answer:

3,205, 3,250, 3,502, 3,520

Quick Tip

Compare numbers from left to right. The first place where the digits differ determines which number is larger.

4.

a) $3,999 + 1 = 4,000$

Adding 1 to 3,999 completes the next thousand.

Final Answer: True

b) Every multiple of 10 is also a multiple of 5.

Every multiple of 10 ends in 0.

THT.

Numbers ending in 0 are divisible by both 10 and 5.

Examples:

$$20 \div 5 = 4$$

$$70 \div 5 = 14$$

Final Answer: True

c) Doubling an odd number always gives an even number.

Doubling means adding a number to itself.

For example:

$$7 + 7 = 14$$

$$11 + 11 = 22$$

An odd number plus an odd number always produces an even number.

Final Answer: True

d) 250 is one quarter of 1,000.

One quarter means divide by 4.

$$1,000 \div 4 = 250$$

Final Answer: True

5.

Understanding the Question

First calculate the full amount the school should collect. Then subtract the amount already received.

Cost per student = \$18.50

Number of students = 27

a) Total amount required

Break 27 into 20 and 7:

THT.

$$\begin{aligned} & \$18.50 \times 27 \\ & = \$18.50 \times 20 + \$18.50 \times 7 \end{aligned}$$

Calculate each part:

$$\$18.50 \times 20 = \$370.00$$

$$\$18.50 \times 7 = \$129.50$$

Add:

$$\$370.00 + \$129.50 = \$499.50$$

Final Answer: The school should collect \$499.50.

b) Amount still required

$$\text{Total required} = \$499.50$$

$$\text{Already collected} = \$350.00$$

$$\$499.50 - \$350.00 = \$149.50$$

Final Answer: The school still needs \$149.50.

Common Mistake

Do not subtract the total amount from \$350. The total required is larger, so subtract the amount collected from the amount required.

6.

Understanding the Question

We need to divide the available food items into equal groups of 6.

$$157 \div 6$$

$$6 \times 26 = 156$$

Therefore:

$$157 \div 6 = 26 \text{ remainder } 1$$

a) Complete hampers

Final Answer: 26 complete hampers

THT.

b) Items remaining

$$157 - 156 = 1$$

Final Answer: 1 food item remains.

c) After another 11 items arrive

There was already 1 item left.

$$1 + 11 = 12$$

Each hamper needs 6 items:

$$12 \div 6 = 2$$

There is enough to make two additional complete hampers.

Final Answer: Yes. Two more complete hampers can be packed.

Quick Tip

Always include the remainder from the first calculation when new items are added.

7.

Understanding the Question

Perimeter measures the distance around the garden. Area measures the space inside it.

$$\text{Length} = 18 \text{ m}$$

$$\text{Width} = 7 \text{ m}$$

a) Perimeter

Perimeter of a rectangle:

$$P = 2 \times (\text{length} + \text{width})$$

Substitute:

$$P = 2 \times (18 + 7)$$

$$P = 2 \times 25$$

$$P = 50 \text{ m}$$

Final Answer: 50 m

b) Area

Area of a rectangle:

$$A = \text{length} \times \text{width}$$

$$A = 18 \times 7$$

$$A = 126 \text{ m}^2$$

Final Answer: 126 m²

c) Fencing cost

Fencing is placed around the outside, so we use the perimeter.

Cost per metre = \$24

Total fencing required = 50 m

$$50 \times \$24$$

$$= 5 \times \$240$$

$$= \$1,200$$

Final Answer: \$1,200

Common Mistake

Do not multiply the area by the fencing cost. Fencing follows the boundary, so the perimeter is required.

8.

The scores were:

Banksia = 184

Acacia = 193

Waratah = 181

Wattle = 176

a) Winning house

The largest score is 193.

Final Answer: Acacia

b) Difference between first and last place

Winning score = 193

Lowest score = 176

$$193 - 176 = 17$$

Final Answer: 17 points

c) Total points

Add the scores:

$$184 + 193 + 181 + 176$$

Group convenient pairs:

$$184 + 176 = 360$$

$$193 + 181 = 374$$

Now add:

$$360 + 374 = 734$$

Final Answer: 734 points

Quick Tip

When adding several numbers, look for pairs that make friendly totals such as 100, 200 or 360.

9.

Understanding the Question

The number must satisfy every clue:

- greater than 300;
- less than 400;
- divisible by 5;
- digit sum equal to 9.

THT.

A number divisible by 5 must end in 0 or 5.

Numbers ending in 0

Between 300 and 400, consider:

310, 320, 330, 340, 350, 360, 370, 380, 390

Check the digit sums.

For 360:

$$3 + 6 + 0 = 9$$

So 360 works.

Numbers ending in 5

Consider:

305, 315, 325, 335, 345, 355, 365, 375, 385, 395

For 315:

$$3 + 1 + 5 = 9$$

So 315 works.

No other candidates have a digit sum of 9.

Final Answer: 315 and 360

Common Mistake

Finding the first number that works is not enough. The question asks for all possible numbers.

10.

Understanding the Question

Both students found the same correct total, but we are comparing which method is more efficient.

The calculation is:

$$198 + 347$$

Student A

$$198 + 300 + 47$$

THT.

This separates 347 into 300 and 47.

It is correct:

$$198 + 300 = 498$$

$$498 + 47 = 545$$

Student B

$$200 + 345$$

Student B adds 2 to 198 and subtracts 2 from 347.

The total stays unchanged:

$$198 + 347 = 200 + 345$$

Now calculate:

$$200 + 345 = 545$$

Student B's calculation uses friendlier numbers and fewer steps.

Final Answer: Student B's method is more efficient.

Key Idea

Adding an amount to one number and subtracting the same amount from the other keeps the total unchanged.

11.

Understanding the Question

We must predict which product is larger before calculating exactly.

Compare:

$$49 \times 21$$

and

$$50 \times 20$$

The second product is:

$$50 \times 20 = 1,000$$

THT.

For the first product:

49 is 1 less than 50, but 21 is 1 greater than 20.

Calculate exactly:

$$\begin{aligned}49 \times 21 \\&= 49 \times 20 + 49 \\&= 980 + 49 \\&= 1,029\end{aligned}$$

Compare:

$$1,029 > 1,000$$

Final Answer: 49×21 is larger by 29.

Exam Tip

When two products use nearby numbers, calculate one convenient product first and compare the adjustment.

12.

Understanding the Question

Every student needs one football, but footballs are sold only in complete packs of 6.

Number of students = 154

$$154 \div 6$$

$$6 \times 25 = 150$$

This leaves:

$$154 - 150 = 4 \text{ students without footballs.}$$

Therefore, 25 packs are not enough.

One more pack is required:

$$25 + 1 = 26$$

Check:

$$26 \times 6 = 156$$

THT.

156 footballs are enough for 154 students.

$156 - 154 = 2$ footballs left over.

Final Answer: 26 packs

Why one fewer pack is insufficient

25 packs provide only 150 footballs, which is 4 fewer than the number required.

13.

Understanding the Question

We need to determine whether being divisible by both 2 and 5 guarantees divisibility by 10.

A number divisible by 2 must be even.

A number divisible by 5 must end in either 0 or 5.

For a number to be both even and divisible by 5, it cannot end in 5 because numbers ending in 5 are odd.

Therefore, it must end in 0.

Every whole number ending in 0 is divisible by 10.

Examples:

20 is divisible by 2, 5 and 10.

70 is divisible by 2, 5 and 10.

130 is divisible by 2, 5 and 10.

Final Answer: Yes. A whole number divisible by both 2 and 5 must also be divisible by 10.

14.

Understanding the Question

The five numbers are consecutive, so they are equally spaced around the middle number.

If five consecutive numbers total 215, the middle number is the average.

Middle number:

THT.

$$215 \div 5 = 43$$

The two numbers before 43 are:

41 and 42

The two numbers after 43 are:

44 and 45

Therefore, the numbers are:

41, 42, 43, 44, 45

Check:

$$\begin{aligned} &41 + 42 + 43 + 44 + 45 \\ &= 83 + 43 + 89 \\ &= 126 + 89 \\ &= 215 \end{aligned}$$

Final Answer: 41, 42, 43, 44 and 45

Quick Tip

For an odd number of consecutive values, the average is the middle value.

15.

Understanding the Question

Each pair of students shakes hands exactly once. We must avoid counting the same handshake twice.

The first student can shake hands with 5 others.

The second student has already shaken hands with the first, so there are 4 new handshakes.

The third student has 3 new handshakes.

Continue:

$$\begin{aligned} &5 + 4 + 3 + 2 + 1 \\ &= 9 + 3 + 2 + 1 \\ &= 12 + 2 + 1 \\ &= 15 \end{aligned}$$

Final Answer: 15 handshakes

Why this method works

Each handshake is counted once when it first occurs. We do not count the same pair again in reverse order.

Common Mistake

Calculating $6 \times 5 = 30$ counts every handshake twice: once from each student's perspective.

To correct this:

$$30 \div 2 = 15$$

Quick Answer Check

1. a) 545
b) 900
c) 7,001
d) 50
2. a) Estimate 1,000; exact answer 1,005; underestimate
b) Estimate 1,000; exact answer 969; overestimate
The first estimate was closer.
3. 3,205, 3,250, 3,502, 3,520
4. a) True
b) True
c) True
d) True
5. a) \$499.50
b) \$149.50
6. a) 26 complete hampers
b) 1 item
c) Yes; 2 additional hampers
7. a) 50 m
b) 126 m²
c) \$1,200
8. a) Acacia
b) 17 points
c) 734 points

THT.

9. 315 and 360

10. Student B; 545

11. 49×21 is larger; 1,029 compared with 1,000

12. 26 packs

13. Yes

14. 41, 42, 43, 44 and 45

15. 15 handshakes