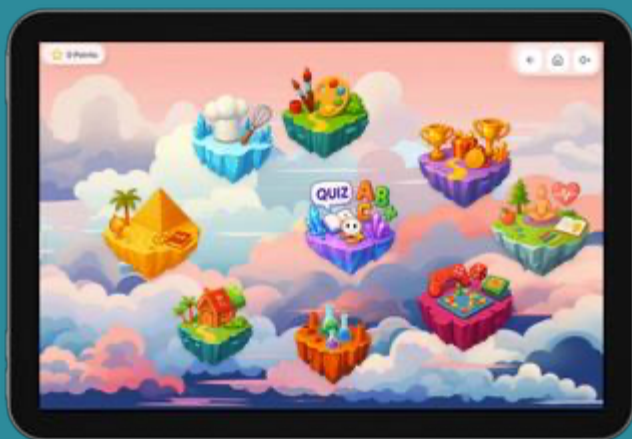




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## Rounding and Estimation – Year 5

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# ROUND

Look at the digit to the right of the target place.

- 0-4: keep the target digit
- 5-9: increase the target digit by 1

→ 48,762 to the nearest 1000 = 49,000

→ 6.384 to the nearest tenth = 6.4



# ESTIMATE

Round to a useful place of compatible numbers.

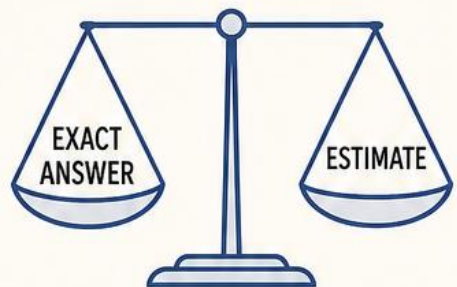
$$2,947 + 5,008$$

approximately  $3,000 + 5,000 = 8,000$



# CHECK

Compare the exact answer with your estimate.  
If they are close, your answer is probably reasonable.



# CHOOSE THE PLACE

| Target place                                                | Check the digit                         |
|-------------------------------------------------------------|-----------------------------------------|
| <b>10</b> Nearest 10<br>$4,376 \rightarrow 4,380$           | <b>ones</b> TTh Th H T <b>O</b>         |
| <b>100</b> Nearest 100<br>$4,376 \rightarrow 4,400$         | <b>tens</b> TTh Th H <b>T</b> O         |
| <b>1000</b> Nearest 1000<br>$4,376 \rightarrow 4,000$       | <b>hundreds</b> TTh Th <b>H</b> T O     |
| <b>10,000</b> Nearest 10,000<br>$64,381 \rightarrow 60,000$ | <b>thousands</b> TTh <b>Th</b> H T O    |
| <b>.</b> Nearest whole<br>$7.46 \rightarrow 7$              | <b>tenths</b> . <b>t</b> h th thth      |
| <b>0.1</b> Nearest tenth<br>$7.46 \rightarrow 7.5$          | <b>hundredths</b> . t <b>h</b> th thth  |
| <b>0.01</b> Nearest hundredth<br>$7.468 \rightarrow 7.47$   | <b>thousandths</b> . t h <b>th</b> thth |

PREVIEW

Look one place to the right.

0-4: keep it

5-9: raise it

# NUMBER-LINE ROUND-OFF CHALLENGE

1. Pick a challenge card.

2. Mark the two nearest multiples of the number sits between.

3. Mark the midpoint.

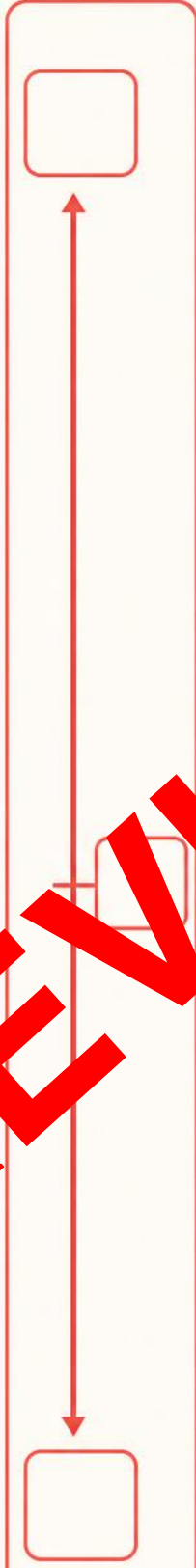
4. Place the number and round to the closer endpoint.

5. Explain which digit decided the result.

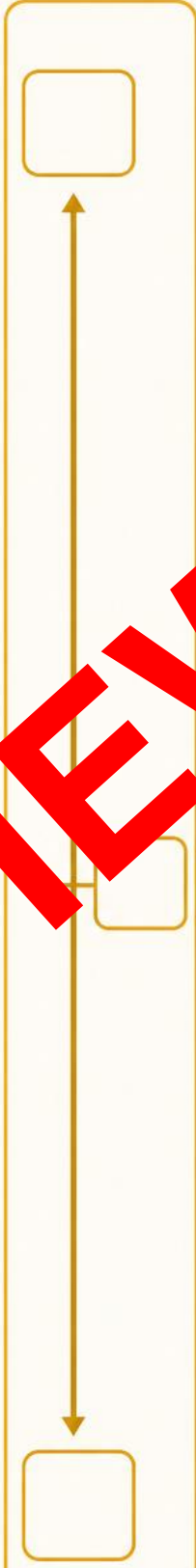
Nearest 10



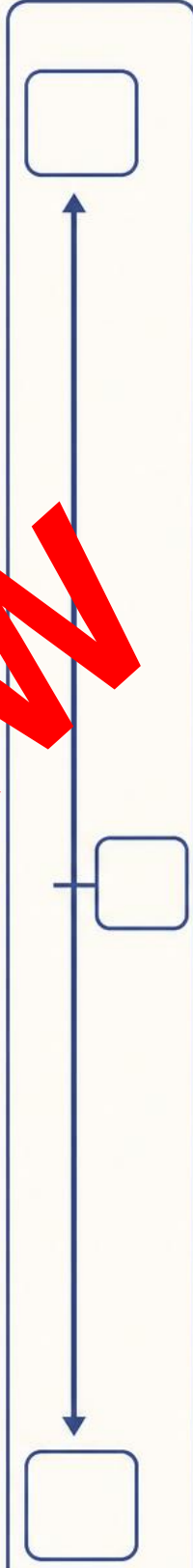
Nearest 100



Nearest 1000



Decimals



Think: below the midpoint or at/above the midpoint?

# NUMBER-LINE CHALLENGE CARDS

248

nearest 10

345

nearest 100

4,450

nearest 100

7,620

nearest 1000

14,950

nearest 1000

83,249

nearest 10,000

674

nearest tenth

9.995

nearest hundredth

2.349

nearest hundredth

47.8

nearest whole

0.685

nearest hundredth

31.46

nearest tenth

PREVIEW

# NUMBER-LINE ROUND-OFF CHALLENGE – ANSWER KEY

|    |                                      |    |                                           |    |                                             |
|----|--------------------------------------|----|-------------------------------------------|----|---------------------------------------------|
| 1  | 248 nearest 10 =<br><b>250</b>       | 2  | 4,500 nearest 100 =<br><b>4,500</b>       | 3  | 4,450 nearest 100 =<br><b>4,500</b>         |
| 4  | 7,620 nearest 1000 =<br><b>8,000</b> | 5  | 14,950 nearest 10 000 =<br><b>15,000</b>  | 6  | 83,249 nearest 10 000 =<br><b>80,000</b>    |
| 7  | 6.74 nearest tenth =<br><b>6.7</b>   | 8  | 9.995 nearest hundredth =<br><b>10.00</b> | 9  | 83,249 nearest hundredth =<br><b>83,250</b> |
| 10 | 47.8 nearest whole =<br><b>48</b>    | 11 | 0.685 nearest hundredth =<br><b>0.69</b>  | 12 | 31.46 nearest tenth =<br><b>31.5</b>        |

## ROUND-OFF REMINDER

1

Mark the target place.



2

Check the digit right.



3

5 or more round up.



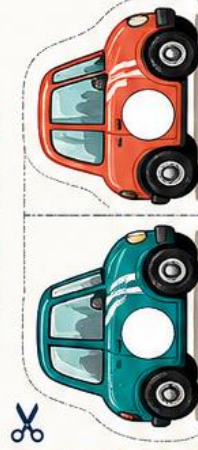
# ROUNDABOUT RALLY



## HOW TO PLAY

- 1 Shuffle the cards.
- 2 On your turn draw a card, round the number to the named place, and find the matching answer on the track.
- 3 If correct, move to that answer.
- 4 First to FINISH wins.

### PLAYER TOKENS



✂ Cut out the tokens to play.





# ROUNABOUT RALLY — CHALLENGE CARDS



84

nearest 10

165

nearest 10

2,348

nearest 100

7,650

nearest 100

12,499

nearest 1000

12,500

nearest 1000

68,420

nearest 10 000

75,510

nearest 10 000

4.46

nearest tenth

3.995

nearest hundredth

91.8

nearest whole

0.684

nearest hundredth

5,555

nearest 100

23,499

nearest 1000

23,500

nearest 1000

349,999

nearest 100 000

350,000

nearest 100 000

6.249

nearest hundredth

18.04

nearest tenth

47.5

nearest whole



# ESTIMATE EXPEDITION

— YEAR 5 MATHS GAME FOR TWO PLAYERS —

## HOW TO PLAY

- 1 Shuffle the cards.
- 2 Draw one card.
- 3 Choose the best estimate.
- 4 Find that estimate in the correct operation zone.
- 5 If correct, move one checkpoint.
- 6 First to FINISH wins.



**ADDITION**

$+$

1,000   8,000   50   15,000

**SUBTRACTION**

$-$

4,400   20,000   35,000   40,000

**MULTIPLICATION**

$\times$

1,000   5,000   6,000   10,000

**DIVISION**

$\div$

600   300   500   40



## EXPLORER TOKENS



★ Use counters or small objects to mark your position on the checkpoints in each zone.  
Place used cards in a discard pile.

# ESTIMATE EXPEDITION — CHALLENGE CARDS



|                                                                                   |                                                                                         |                                                                                         |                                                                                         |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| <p><b>1</b> <math>398 + 604</math></p> <p>A 800 B 900 C 1,000 D 1,200</p>         | <p><b>2</b> <math>912 + 3,088</math></p> <p>A 7,000 B 8,000 C 11,000 D 11,000</p>       | <p><b>3</b> <math>\\$18.70 + \\$31.20</math></p> <p>A \$30 B \$40 C \$50 D \$60</p>     | <p><b>4</b> <math>9,845 + 5,230</math></p> <p>A 13,000 B 14,000 C 15,000 D 16,000</p>   |
| <p><b>5</b> <math>8,240 - 3,770</math></p> <p>A 4,000 B 4,400 C 4,500 D 5,000</p> | <p><b>6</b> <math>31,600 - 18,400</math></p> <p>A 18,000 B 19,000 C 20,000 D 21,000</p> | <p><b>7</b> <math>52,700 - 18,400</math></p> <p>A 33,000 B 34,000 C 35,000 D 36,000</p> | <p><b>8</b> <math>70,450 - 29,880</math></p> <p>A 38,000 B 39,000 C 40,000 D 41,000</p> |
| <p><b>9</b> <math>49 \times 21</math></p> <p>A 800 B 900 C 1,000 D 1,200</p>      | <p><b>10</b> <math>198 \times 41</math></p> <p>A 6,000 B 7,000 C 8,000 D 9,000</p>      | <p><b>11</b> <math>304 \times 19</math></p> <p>A 5,000 B 6,000 C 7,000 D 8,000</p>      | <p><b>12</b> <math>48 \times 198</math></p> <p>A 8,000 B 9,000 C 10,000 D 12,000</p>    |
| <p><b>13</b> <math>4,820 \div 8</math></p> <p>A 500 B 600 C 700 D 800</p>         | <p><b>14</b> <math>9,135 \div 29</math></p> <p>A 200 B 300 C 400 D 500</p>              | <p><b>15</b> <math>3,956 \div 8</math></p> <p>A 400 B 450 C 500 D 550</p>               | <p><b>16</b> <math>1,582 \div 39</math></p> <p>A 30 B 40 C 50 D 60</p>                  |

# PLACE VALUE PILOT



Name: \_\_\_\_\_

## A. Round each number.

1. 8,463 to the nearest 10. \_\_\_\_\_
2. 27,851 to the nearest 100. \_\_\_\_\_
3. 604,499 to the nearest 1000. \_\_\_\_\_
4. 76,250 to the nearest 1000. \_\_\_\_\_
5. 348,620 to the nearest 10 000. \_\_\_\_\_
6. 952,410 to the nearest 100 000. \_\_\_\_\_

## B. Complete the table for 64 782.

| Target place   | Rounded number |
|----------------|----------------|
| nearest 10     |                |
| nearest 100    |                |
| nearest 1000   |                |
| nearest 10 000 |                |

## C. Thinking challenge.

1. What is the smallest whole number that rounds to 72,000 to the nearest thousand?  
\_\_\_\_\_
2. What is the largest whole number that rounds to 72,000 to the nearest thousand?  
\_\_\_\_\_

# PLACE VALUE PILOT



## ANSWERS

### A. Round each number.

1. 8,463 to the nearest 10. 8,460
2. 27,851 to the nearest 100. 27,900
3. 604,499 to the nearest 1000. 604,000
4. 76,250 to the nearest 1000. 76,000
5. 348,620 to the nearest 10 000. 350,000
6. 952,410 to the nearest 100 000. 1,000,000

### B. Complete the table for 64 782.

| Target place   | Rounded number |
|----------------|----------------|
| nearest 10     | 64,780         |
| nearest 100    | 64,800         |
| nearest 1000   | 65,000         |
| nearest 10 000 | 60,000         |

### C. Thinking challenge.

1. What is the smallest whole number that rounds to 72,000 to the nearest thousand?  
71,500
2. What is the largest whole number that rounds to 72,000 to the nearest thousand?  
72,499

# DECIMAL DESTINATIONS



Name: \_\_\_\_\_

**A.** Round each decimal to the place value given.

1. 8.74 to the nearest whole number.

\_\_\_\_\_

2. 6.248 to the nearest tenth.

\_\_\_\_\_

3. 0.995 to the nearest hundredth.

\_\_\_\_\_

4. 12.06 to the nearest tenth.

\_\_\_\_\_

5. 9.999 to the nearest hundredth.

\_\_\_\_\_

6. 2.444 to the nearest hundredth.

\_\_\_\_\_

**B.** Round 47.226 to the nearest whole number, tenth and hundredth.

| Nearest whole number | Nearest tenth | Nearest hundredth |
|----------------------|---------------|-------------------|
|                      |               |                   |

**C. Reasoning.**

Ava says, "5.65 rounded to the nearest tenth is 5.6." Is Ava correct?

Explain with at least four ruled writing lines.

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# DECIMAL DESTINATIONS



## ANSWERS

**A.** Round each decimal to the place value given.

1. 8.74 to the nearest whole number.

9

2. 6.248 to the nearest tenth.

6.2

3. 0.995 to the nearest hundredth.

1.00

4. 12.406 to the nearest tenth.

12.4

5. 9.999 to the nearest hundredth.

10.00

6. 2.444 to the nearest hundredth.

2.44

**B.** Round 47.396 to the nearest whole number, tenth and hundredth.

| Nearest whole number | Nearest tenth | Nearest hundredth |
|----------------------|---------------|-------------------|
| <u>47</u>            | <u>47.4</u>   | <u>47.39</u>      |

**C. Reasoning.**

Ava says, "5.65 rounded to the nearest tenth is 5.6." Is Ava correct?

Explain with at least four ruled writing lines.

**No. The hundredths digit is 5, so the tenths digit rounds up:  $5.65 \rightarrow 5.7$ .**

# ESTIMATE FIRST: SUMS & DIFFERENCES

Name: \_\_\_\_\_



Round first.  
Show the estimate.

**Section A:** Estimate each calculation as directed.

1. Estimate  $4,782 + 3,219$  by rounding to the nearest hundred.

2. Estimate  $28,640 + 11,370$  by rounding to the nearest thousand.

3. Estimate  $9,815 - 4,263$  by rounding to the nearest hundred.

4. Estimate  $63,450 - 3,720$  by rounding to the nearest thousand.

5. Estimate  $14.8 + 6.1$  by rounding to the nearest whole number.

6. Estimate  $52.7 - 18.4$  by rounding to the nearest whole number.

**Section B:** Is the exact answer 9,438 reasonable for  $6,457 + 2,981$ ?

Use an estimate and explain.

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# ESTIMATE FIRST: SUMS & DIFFERENCES

## ANSWERS



Round first.  
Show the estimate.

**Section A:** Estimate each calculation as directed.

1. Estimate  $4,782 + 3,219$  by rounding to the nearest hundred.

$$4,800 + 3,200 = 8,000$$

2. Estimate  $28,640 + 11,370$  by rounding to the nearest thousand.

$$29,000 + 11,000 = 40,000$$

3. Estimate  $9,815 - 4,263$  by rounding to the nearest hundred.

$$9,800 - 4,300 = 5,500$$

4. Estimate  $63,450 - 29,720$  by rounding to the nearest thousand.

$$63,000 - 29,000 = 34,000$$

5. Estimate  $14.8 + 6.1$  by rounding to the nearest whole number.

$$15 + 6 = 21$$

6. Estimate  $52.7 - 18.4$  by rounding to the nearest whole number.

$$53 - 18 = 35$$

**Section B:** Is the exact answer 9,438 reasonable for  $6,457 + 2,981$ ?

Use an estimate and explain.

$$6,500 + 3,000 = 9,500.$$

Yes, 9,438 is close to 9,500, so it is reasonable.

Name: \_\_\_\_\_

# FRIENDLY FACTORS

Use compatible numbers.

**A. Estimate each calculation and show the friendly numbers.**

**1.**  $49 \times 21$

Friendly numbers: \_\_\_\_\_

Estimate: \_\_\_\_\_

**2.**  $198 \times 31$

Friendly numbers: \_\_\_\_\_

Estimate: \_\_\_\_\_

**3.**  $4,820 \div 8$

Friendly numbers: \_\_\_\_\_

Estimate: \_\_\_\_\_

**4.**  $9,135 \div 29$

Friendly numbers: \_\_\_\_\_

Estimate: \_\_\_\_\_

**5.**  $304 \times 19$

Friendly numbers: \_\_\_\_\_

Estimate: \_\_\_\_\_

**6.**  $6,175 \div 62$

Friendly numbers: \_\_\_\_\_

Estimate: \_\_\_\_\_

**B. Choose the best estimate for  $3,956 \div 8$ .**

Best estimate (circle one):

50

500

5,000

Explain which compatible numbers prove your choice.

---

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---

## ANSWERS

# FRIENDLY FACTORS

Use compatible numbers.

A. Estimate each calculation and show the friendly numbers.

1.  $49 \times 21$

Friendly numbers:  $50 \times 20$

Estimate:  $1,000$

2.  $198 \times 31$

Friendly numbers:  $200 \times 30$

Estimate:  $6,000$

3.  $4,820 \div 8$

Friendly numbers:  $4,800 \div 8$

Estimate:  $600$

4.  $9,135 \div 29$

Friendly numbers:  $9,000 \div 30$

Estimate:  $300$

5.  $304 \times 19$

Friendly numbers:  $300 \times 20$

Estimate:  $6,000$

6.  $6,175 \div 62$

Friendly numbers:  $6,200 \div 62$

Estimate:  $100$

B. Choose the best estimate for  $3,956 \div 8$ .

Best estimate (circle one):

50

500

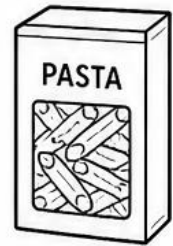
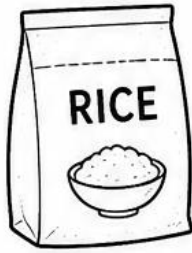
5,000

Explain which compatible numbers prove your choice.

$4,000 \div 8 = 500$

Name: \_\_\_\_\_

# SHOPPING SENSE



| ITEM    | PRICE  | QUANTITY | ROUNDED PRICE | ESTIMATED COST |
|---------|--------|----------|---------------|----------------|
| Rice    | \$4.70 | 2        |               |                |
| Milk    | \$3.25 | 1        |               |                |
| Apples  | \$5.60 | 2        |               |                |
| Bread   | \$3.80 | 1        |               |                |
| Yoghurt | \$6.40 |          |               |                |
| Pasta   | \$2.95 | 3        |               |                |

1 Estimate the total cost.

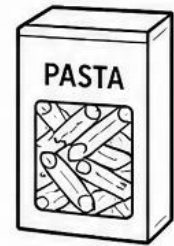
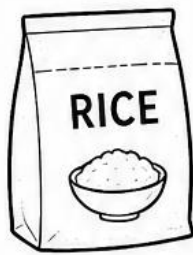
2 Is \$50 enough? Explain.

3 Calculate the exact total.

4 How much higher or lower is your estimate than the exact total?

# ANSWERS

## SHOPPING SENSE



| ITEM    | PRICE  | QUANTITY | ROUNDED PRICE | ESTIMATED COST |
|---------|--------|----------|---------------|----------------|
| Rice    | \$4.70 | 2        | \$5           | \$10           |
| Milk    | \$3.25 | 1        | \$3           | \$3            |
| Apples  | \$5.60 | 2        | \$6           | \$12           |
| Bread   | \$3.80 | 1        | \$4           | \$4            |
| Yoghurt | \$6.40 | 1        | \$6           | \$6            |
| Pasta   | \$2.95 | 3        | \$3           | \$9            |

1 Estimate the total cost.

Estimated total: \$44.

2 Is \$50 enough? Explain.

Yes. About \$6 remains.

3 Calculate the exact total.

Exact total: \$42.90.

4 How much higher or lower is your estimate than the exact total?

The estimate is \$1.10 higher.

# BEST ESTIMATE MATTERS

Name: \_\_\_\_\_

## Section A: Circle the sensible measure.

|                                                   |        |      |
|---------------------------------------------------|--------|------|
| 1. A classroom door is about 2 m or 20 m high.    | 2 m    | 20 m |
| 2. A drink bottle holds about 750 mL or 75 L.     | 750 mL | 75 L |
| 3. Melbourne to Sydney is about 900 km or 9 km.   | 900 km | 9 km |
| 4. A school bag has a mass of about 4 kg or 40 g. | 4 kg   | 40 g |

## Section B: Make a sensible estimate and show the rounded or compatible numbers.

|                           |                                          |
|---------------------------|------------------------------------------|
| 5. $48 \times 198$ seats. | 6. $29 \times 412$ books.                |
| 7. $9,845 + 5,230$ .      | 8. 1,582 students shared among 39 buses. |



**Tip:** A good estimate should be quick and reasonable.

# BEST ESTIMATE MATTERS

## ANSWERS

**Section A: Circle the sensible measure.**

|                                                   |                    |
|---------------------------------------------------|--------------------|
| 1. A classroom door is about 2 m or 20 m high.    | <u>2 m</u> 20 m    |
| 2. A drink bottle holds about 750 mL or 75 L.     | <u>750 mL</u> 75 L |
| 3. Melbourne to Sydney is about 900 km or 9 km.   | <u>900 km</u> 9 km |
| 4. A school bag has a mass of about 4 kg or 40 g. | <u>4 kg</u> 40 g   |

**Section B: Make a sensible estimate and show the rounded or compatible numbers.**

|                                                                  |                                                                                        |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 5. $48 \times 198$ seats.<br><br>$50 \times 200 = 10,000$ seats. | 6. $29 \times 412$ books.<br><br>$30 \times 400 = 12,000$ books.                       |
| 7. $9,845 + 5,230$ .<br><br>$10,000 + 5,000 = 15,000$ .          | 8. 1,582 students shared among 39 buses.<br><br>$1,600 \div 40 = 40$ students per bus. |



**Tip:** A good estimate should be quick and reasonable.

# ROUNDING & ESTIMATION QUICK GUIDE



## ROUND:

- 1 Choose the target place.
- 2 Check the digit immediately right.
- 3 If it is 0–4, keep the target digit; if it is 5–9, round up.
- 4 Replace following whole-number digits with zeros or remove extra decimal places.

## EXAMPLE:

48,762 to  
nearest 1000  
= 49,000.



## ESTIMATE:

Round to friendly numbers,  
then calculate.

## EXAMPLE:

$$198 \times 41 \approx 200 \times 40 = 8,000.$$



## CHECK:

Compare the exact answer  
with your estimate; investigate  
a large mismatch.



# ROUNDING & ESTIMATION QUICK GUIDE



## ROUND:

- 1 Choose the target place.
- 2 Check the digit immediately right.
- 3 If it is 0–4, keep the target digit; if it is 5–9, round up.
- 4 Replace following whole-number digits with zeros or remove extra decimal places.

## EXAMPLE:

48,762 to  
nearest 1000  
= 49,000.



## ESTIMATE:

Round to friendly numbers,  
then calculate.

## EXAMPLE:

$$198 \times 41 \approx 200 \times 40 = 8,000.$$



## CHECK:

Compare the exact answer  
with your estimate; investigate  
a large mismatch.



# ROUNDING & ESTIMATION REVIEW — PAGE 1

Name: \_\_\_\_\_

Score: \_\_\_\_ / 10

## Section A, Rounding

1. Round 72,486 to the nearest 100. \_\_\_\_\_

2. Round 369,550 to the nearest 1000. \_\_\_\_\_

3. Round 843,219 to the nearest 10 000. \_\_\_\_\_

4. Round 7.486 to the nearest tenth. \_\_\_\_\_

5. Round 0.995 to the nearest hundredth. \_\_\_\_\_

6. Explain which digit is the check digit when rounding and how it is used. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Section B, Estimation

7. Estimate  $4,921 + 2,887$  by rounding to the nearest hundred. \_\_\_\_\_

8. Estimate  $24,123 - 8,760$  by rounding to the nearest thousand. \_\_\_\_\_

9. Estimate  $198 \times 42$  using compatible numbers. \_\_\_\_\_

10. Estimate  $6,375 \div 63$  using compatible numbers. \_\_\_\_\_

# ROUNDING & ESTIMATION REVIEW – PAGE 2

Name: \_\_\_\_\_

## SECTION A: SCHOOL FETE BUDGET

Equipment costs \$1,185, food costs \$842 and prizes cost \$463.

The budget is \$2,500.

1. Estimate the total by rounding each cost to the nearest hundred.

\_\_\_\_\_  
\_\_\_\_\_



2. Calculate the exact total. Is the fete within budget? By how much?

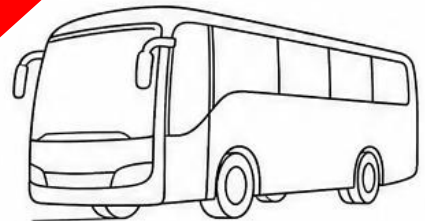
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## SECTION B: BUS TRIP

487 students travel on buses that seat 52 students each.

3. Estimate the number of buses needed.

\_\_\_\_\_  
\_\_\_\_\_



4. How many buses are needed exactly? Explain why.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## SECTION C: FIND THE ERROR

Noah says 38,650 rounded to the nearest thousand is 38,000.

5. Correct Noah and explain.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

38,650 rounded to the nearest thousand is 38,000.

## SECTION D: CREATE AND EXPLAIN

6. Write a number that rounds to 6.3 to the nearest tenth.

\_\_\_\_\_

7. Explain why it rounds to 6.3.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# ROUNDING & ESTIMATION REVIEW – PAGE 1

## ANSWERS

Score: \_\_\_\_ / 10

### Section A, Rounding

1. Round 72,486 to the nearest 100.

72,500

2. Round 369,550 to the nearest 1000.

370,000

3. Round 843,219 to the nearest 10 000.

840,000

4. Round 7.486 to the nearest tenth.

7.5

5. Round 0.995 to the nearest hundredth.

1.00

6. Explain which digit is the check digit when rounding and how it is used.

The check digit is immediately right of the target place. If it is 5–9, round up; if it is 0–4, keep the target digit.

### Section B, Estimation

7. Estimate  $4,921 + 2,887$  by rounding to the nearest hundred.

$$4,900 + 2,900 = 7,800$$

8. Estimate  $31,000 - 8,760$  by rounding to the nearest thousand.

$$31,000 - 9,000 = 22,000$$

9. Estimate  $198 \times 42$  using compatible numbers.

$$200 \times 40 = 8,000$$

10. Estimate  $6,375 \div 63$  using compatible numbers.

$$6,300 \div 63 = 100$$

# ROUNDING & ESTIMATION REVIEW – PAGE 2

## ANSWERS

### SECTION A: SCHOOL FETE BUDGET

Equipment costs \$1,185, food costs \$842 and prizes cost \$463.

The budget is \$2,500.

1. Estimate the total by rounding each cost to the nearest hundred.

$$\underline{\$1,200 + \$800 + \$500 = \$2,500.}$$



2. Calculate the exact total. Is the fete within budget? By how much?

$$\underline{\text{Exact total} = \$2,490.}$$

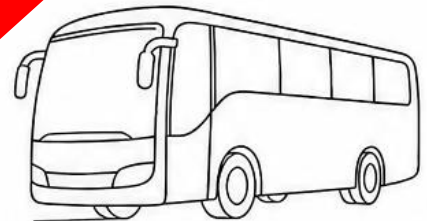
Yes, it is within budget by \$10.

### SECTION B: BUS TRIP

487 students travel on buses that seat 52 students each.

3. Estimate the number of buses needed.

$$\underline{\text{About } 500 \div 50 = 10 \text{ buses}}$$



4. How many buses are needed exactly? Explain why.

Exactly 10 buses, as 10 buses seat only 468 students,  
so one more bus is needed.

### SECTION C: FIND THE ERROR

Noah says 38,650 rounded to the nearest thousand is 38,000.

5. Correct Noah and explain.

Noah is incorrect. 38,650 rounds to 39,000  
because the hundreds digit is 6.

38,650 rounded to the nearest thousand is 38,000.

### SECTION D: CREATE AND EXPLAIN

6. Write a number that rounds to 6.3 to the nearest tenth.

Example: 6.27.

7. Explain why it rounds to 6.3.

The hundredths digit is 7, so 6.2 rounds up to 6.3.





# ROUNDING AND ESTIMATION RUBRIC

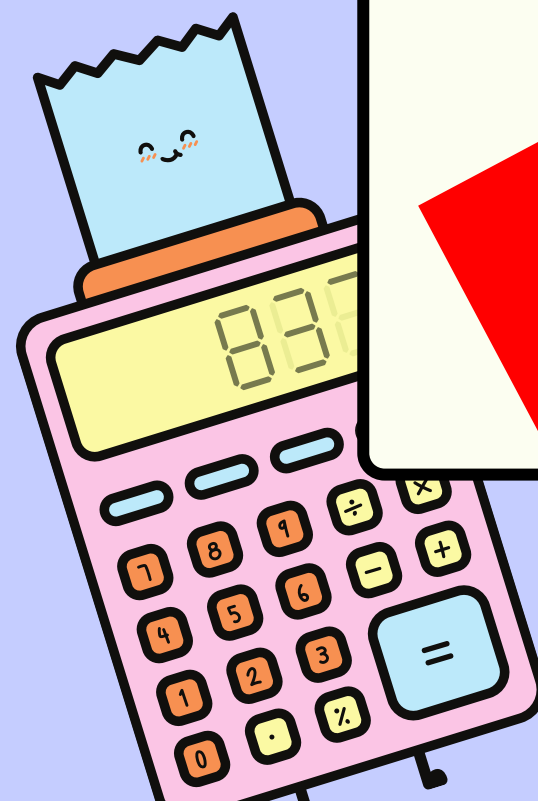
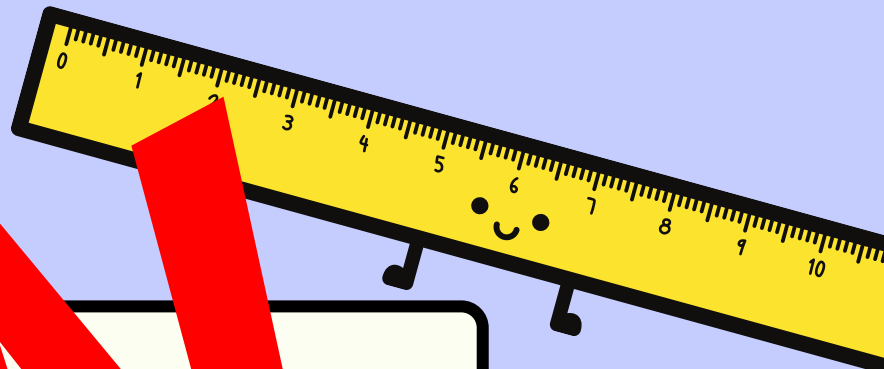
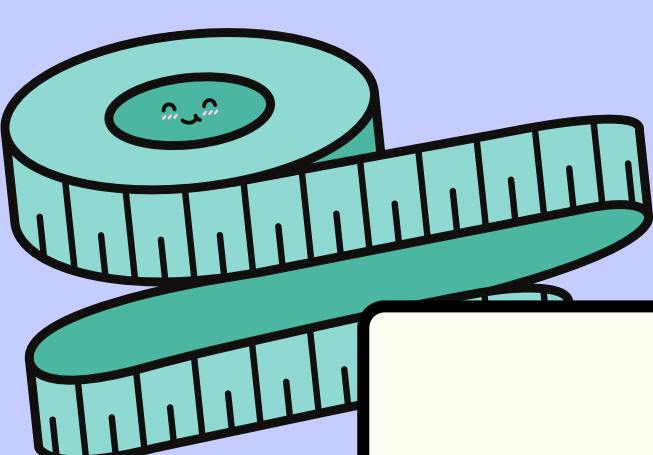


| CRITERION                              | BEGINNING                           | DEVELOPING                              | ACHIEVING                                       | CONFIDENT                                      | EXCEEDING                                           |
|----------------------------------------|-------------------------------------|-----------------------------------------|-------------------------------------------------|------------------------------------------------|-----------------------------------------------------|
| <b>Rounding Accuracy</b>               | Needs help to find the target place | Rounds whole numbers correctly          | Rounds whole numbers and decimals accurately    | Applies rounding accurately in varied contexts | Explains boundary cases and justifies accuracy.     |
| <b>Estimation Strategy Choice</b>      | Chooses a strategy with help        | Uses a suitable rounding strategy       | Selects suitable rounding or compatible numbers | Adapts strategy to the operation and context   | Compares strategies and defends the most efficient. |
| <b>Reasonableness and Checking</b>     | Rarely checks a result              | Compares with an estimate when prompted | Uses estimates to check reasonableness          | Detects unlikely answers and revises           | Critiques precision and likely error.               |
| <b>Problem Solving and Explanation</b> | Needs steps modelled                | Solves familiar one-step tasks          | Solves multi-step real-world tasks              | Explains choices and interprets results        | Creates, tests and generalises solutions.           |
| <b>Mathematical Communication</b>      | Working is unclear or incomplete    | Shows some working and terms            | Shows organised working and correct terms       | Gives concise, logical reasoning               | Uses precise language and representations.          |

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☐ **KEY:** Circle or highlight one descriptor in each row.

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**PREVIEW**

# Accounting and Estimation



# Why round and estimate?

Rounding gives a nearby value that is quicker to use.

Estimation uses rounded or compatible numbers to predict an answer.

A sensible estimate helps decide whether an exact answer is reasonable.



# Place value decides the strategy

Name the target place. Underline its digit.

The digit immediately to the right is the check digit.

0-4: keep the target digit. 5-9: increase it by 1.



# A reliable rounding routine

1. Choose the target place.
2. Check the digit immediately right.
3. Round up or keep.
4. Replace following with number digits with zeros, or remove extra decimal places.



# Nearest 10 on a number line

84 lies between 80 and 90

The midpoint is 85

84 is closer to 80 so 84 rounded to the nearest 10 is 80.



# Nearest 100, 1000 and 10 000

12,499 rounds to 12,000 to the nearest 1000.

12,500 rounds to 13,000 to the nearest 1000.

68,423 rounds to 70,000 to the nearest 10 000.



# Rounding decimals to a chosen place

6.248 rounds to 6.2 to the nearest tenth.

0.995 rounds to 1.00 to the nearest hundredth.

Keep trailing zeros when they show the required place.



# Choose a useful level of precision

Choose a rounding place that suits the purpose.

Nearest 10 gives more precision than nearest 1000.

Too much rounding can make an estimate less useful.



# Estimate sums and differences

$4,782 + 3,219$  is about  $4,000 + 3,200 = 7,200$ .

$63,491 - 28,726$  is about  $63,000 - 29,000 = 34,000$ .

State clearly when an answer is an estimate.



# Estimate products

$49 \times 21$  is about  $50 \times 20 = 1,000$

$304 \times 20$  is about  $300 \times 20 = 6,000$ .

Round factors to numbers that are easy to multiply mentally.



# Use compatible numbers for quotients

$4,820 \div 8$  is about  $4800 \div 8 = 600$

$9,135 \div 3$  is about  $9000 \div 3 = 300$ .

Compatible numbers divide evenly.



# Shopping and budgeting estimation

Rice:  $\$4.70 \times 2$  is about  $\$5 \times 2 = \$10$

An estimated basket total of \$40 shows that \$50 is enough.

The cost total of \$42.90, is close to the estimate.



# Measurement estimates must make sense

A classroom door is about 1 m, not 20 m.

487 students ÷ about 50 per bus is about 10 buses.

Use familiar benchmarks to reject unreasonable values.



# Check exact answers for reasonableness

$6,457 + 2,981$  is about  $6,000 + 3,000 = 9,000$ .

The exact answer, 9,438, is close to 9,500.

A large mismatch suggests that we should check the calculation.



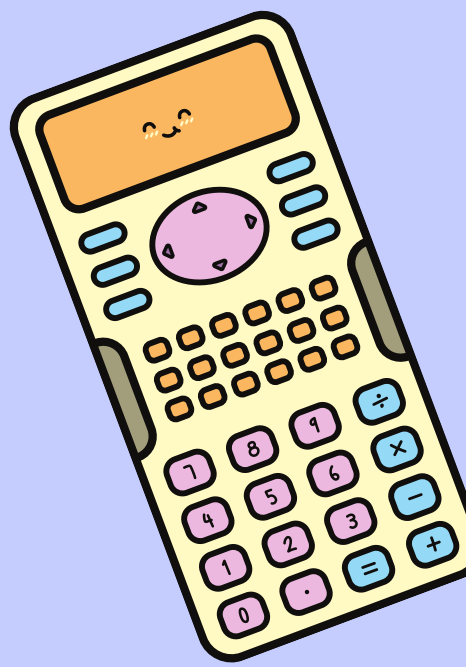
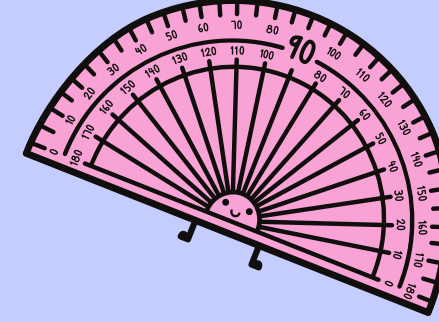
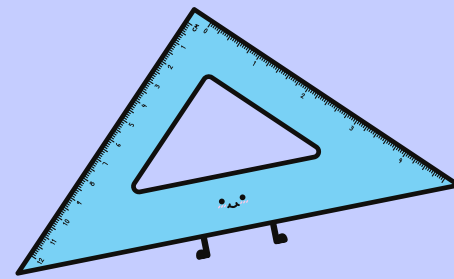
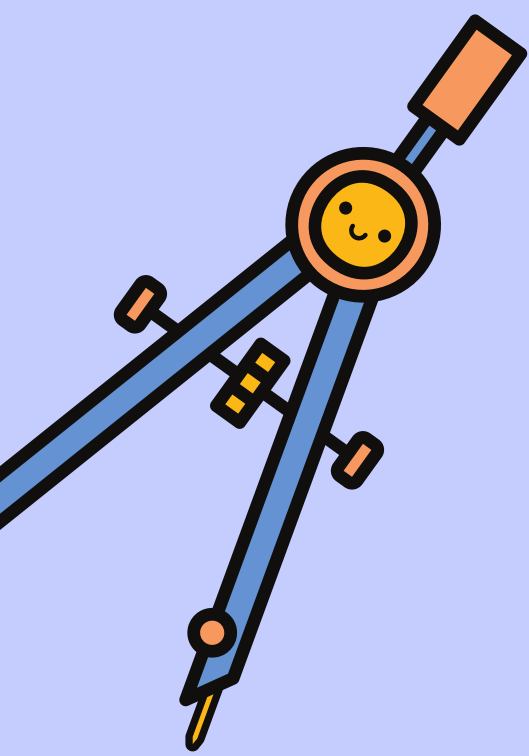
# Avoid common rounding mistakes

Round using the check digit, not the hundredth digit.

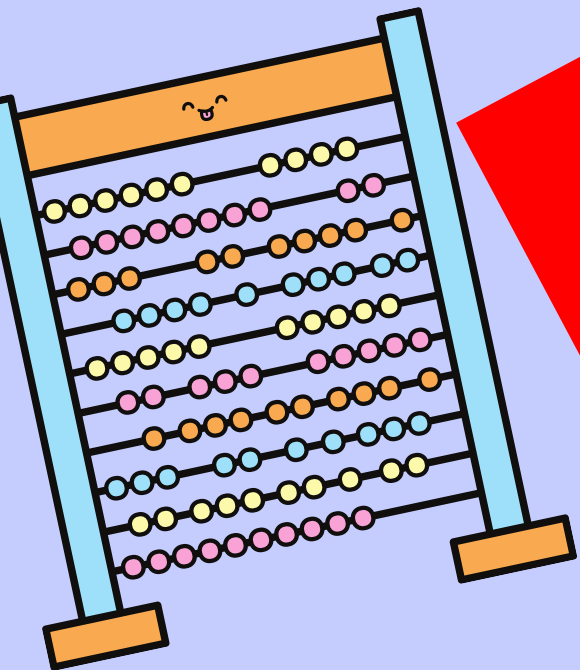
Keep the target place value: 9.95 rounds to 10.00 to the nearest hundredth.

Always ask: Is the estimate sensible for the context?

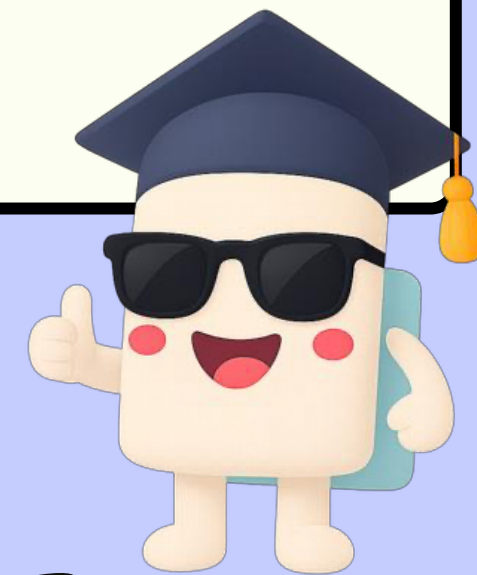
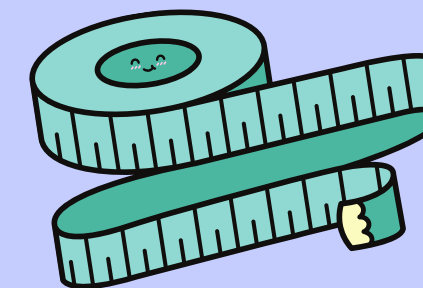
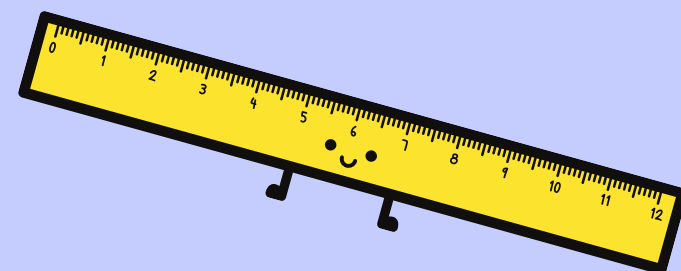




Well Done!



PREVIEW



# Question 1 - Multiple choice

369,550 rounded to the nearest 1000 is.

A. 369,000

B. 370,000

C. 369,500

D. 400,000



# Answer 1

B 370,000

The hundreds digit is 5, so the thousands digit rounds up.



## Question 2 - True or False

When rounding 348,620 to the nearest 10,000, the check digit is 8.

True or False?



## Answer 2

True

The 8 is in the thousands place, immediately right of the target thousands place.



# Question 3 - Short answer

Round 843,219 to the nearest 100

**PREVIEW**



# Answer 3

840,000

The thousands digit is 0, so the ten-thousands digit stays the same.



## Question 4 - Multiple choice

6.248 rounded to the nearest tenth is:

A. 6.2

B. 6.3

C. 6.25

D. 6.24



# Answer 4

A. 6

The hundredths digit is 4, so the tenths digit stays the same.



## Question 5 - True or false

An estimate must be exactly the same as the exact answer.

True or false?



# Answer 5

Fals

An estimate is a nearly value used to predict or check an exact answer.



## Question 6 - Multiple choice

Estimate  $4,782 + 3,219$  by rounding to the nearest hundred.

- A. 8,000
- B. 7,800
- C. 8,000
- D. 8,500



# Answer 6

**PREVIEW**

C. 8,000

$$5,000 + 3,000 = 8,000$$



# Question 7 - Short answer

Estimate  $63,491 - 28,720$  by rounding to the nearest thousand.

**PREVIEW**



# Answer 7

$$62,000 - 28,000 = 34,000.$$



## Question 8 - Multiple choice

The best compatible-number estimate for  $9,555 \div 29$  is:

- A. 30
- B. 300
- C. 3,000
- D. 9,000



# Answer 8

**PREVIEW**

B. 30

2,000 20 300.



## Question 9 - True or False

A shopping estimate is \$44. A \$50 budget should be enough.

True or False?



## Answer q

True  
\$50 - \$44 is about \$6, so the budget should be enough.



# Question 10 - Reasoning

Give a whole number that rounds to 5600 to the nearest 100.

Explain why it rounds to 5,600.



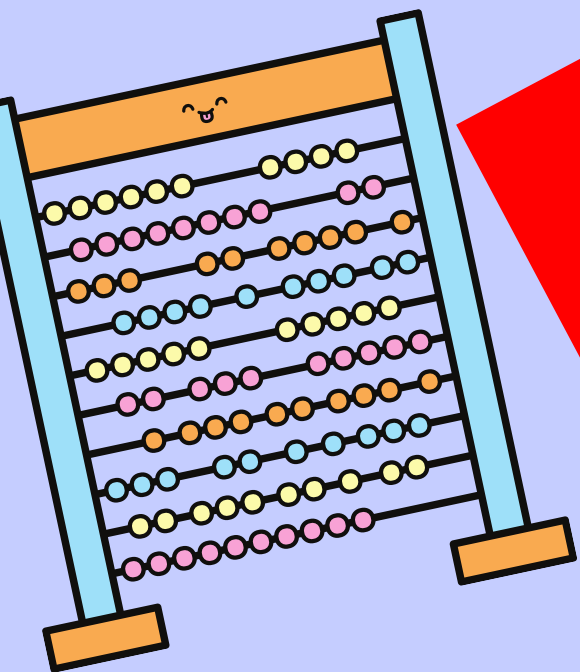
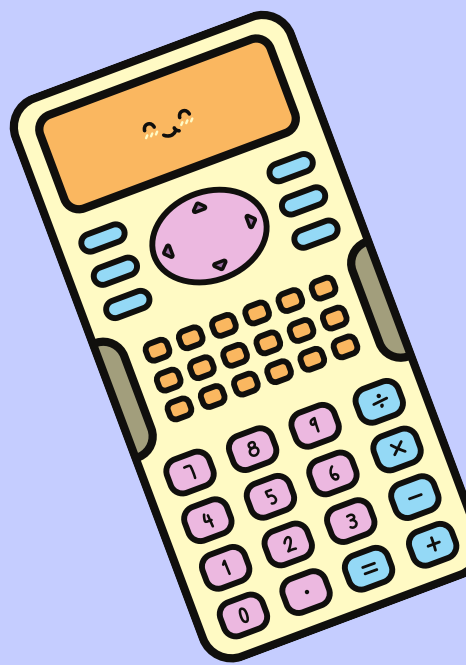
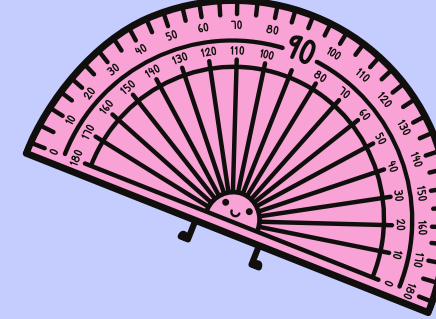
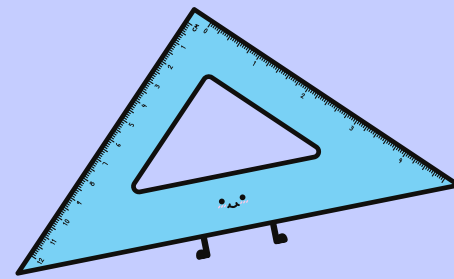
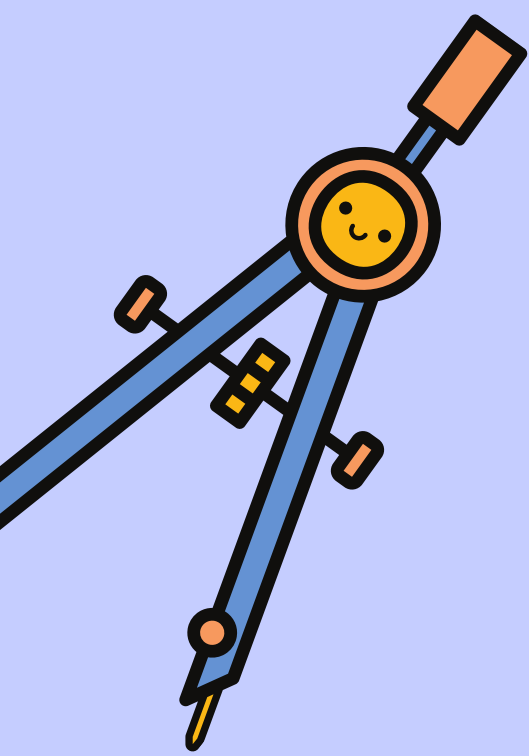
# Answer 10

Example: 5,570

The tens digit is 7, so 5,570 rounds up to 5,600.

Any whole number from 5,550 to 5,649 works.





PREVIEW

Well Done!

