THE STRIVING

# MUSLIM ACADEMY

Islamic and Academic Education

YEARS 7 TO 9 · MATHEMATICS · PRACTICE PACK

# Working mathematically

*The key stage 3 programme of study. The sets get harder through the pack, from arriving in Year 7 to leaving Year 9, and every question is worked through at the back.*

WHAT IS INSIDE

- Choosing a method, and checking it by estimating
- Using algebra to say what is always true
- Testing a claim, and finding a counterexample
- How each one is worked

**The Striving Muslim Academy**

3 sets · a hint on every question

Written for a parent teaching at home. No training assumed, and nothing else to buy.

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# Using algebra to say what is always true

These get harder as you go down. Do them in order.



1. **Add any two consecutive whole numbers starting at 5. Then write, in terms of n, what you always get when you add n and n + 1.**
   *Do the particular case first, then write the general one.*

2. **Add any two consecutive whole numbers starting at 5. Then write, in terms of n, what you always get when you add n and n + 1.**
   *Do the particular case first, then write the general one.*

3. **Add any two consecutive whole numbers starting at 4. Then write, in terms of n, what you always get when you add n and n + 1.**
   *Do the particular case first, then write the general one.*

4. **Add any two consecutive whole numbers starting at 3. Then write, in terms of n, what you always get when you add n and n + 1.**
   *Do the particular case first, then write the general one.*

5. **A number is multiplied by 6 and then 6 is added. Write that as an expression in n.**
   *Write the operations in the order they happen.*

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# Quick check

One right answer each. Ring the letter. These are for seeing what has stuck, so do them without working anything out on paper.



1. **Someone says: every multiple of 3 is also a multiple of 9. Give the smallest whole number that shows this is wrong.**
   (A) 17 (B) 3 (C) 28 (D) 4

2. **Add any two consecutive whole numbers starting at 5. Then write, in terms of n, what you always get when you add n and n + 1.**
   (A) 7n + 7 (B) 4n + 4 (C) 6n + 6 (D) 2n + 1

3. **Someone says: squaring a number always makes it bigger. Give the smallest whole number that shows this is wrong.**
   (A) 28 (B) 0 (C) 53 (D) 5

4. **Add any two consecutive whole numbers starting at 3. Then write, in terms of n, what you always get when you add n and n + 1.**
   (A) 7n + 7 (B) 4n + 4 (C) 6n + 6 (D) 2n + 1

5. **A number is multiplied by 4 and then 4 is added. Write that as an expression in n.**
   (A) 4n + 4 (B) 7n + 7 (C) a rhombus (D) 2n + 1

6. **A sequence starts at 7 and goes up by 2 each time. What is the 6th term?**
   (A) 17 (B) 33 (C) 28 (D) 43

7. **Add any two consecutive whole numbers starting at 5. Then write, in terms of n, what you always get when you add n and n + 1.**
   (A) a rhombus (B) 2n + 1 (C) 7n + 7 (D) 4n + 4

8. **Someone says: if a shape has four equal sides it must be a square. Name a shape that shows this is wrong.**
   (A) 7n + 7 (B) a rhombus (C) 2n + 1 (D) 4n + 4

9. **210 pencils are shared equally between 6 classes. One class gives 7 away. How many does that class have left?**
   (A) 28 (B) 0 (C) 43 (D) 6

10. **Someone says: squaring a number always makes it bigger. Give the smallest whole number that shows this is wrong.**
    (A) 5 (B) 43 (C) 0 (D) 28

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# How each one is worked

Every question, with the steps. Mark it together.



## CHOOSING A METHOD, AND CHECKING IT BY ESTIMATING

**1. A box holds 25 jars. How many jars are in 6 boxes, and roughly how many is that if you round 25 to the nearest ten first?**

1. Exactly: 25 × 6 = 150.
2. Rounding 25 to 30: 30 × 6 = 180.
3. The estimate is close, so the exact answer is believable.

Answer: **150 exactly, about 180**

**2. A box holds 25 jars. How many jars are in 8 boxes, and roughly how many is that if you round 25 to the nearest ten first?**

1. Exactly: 25 × 8 = 200.
2. Rounding 25 to 30: 30 × 8 = 240.
3. The estimate is close, so the exact answer is believable.

Answer: **200 exactly, about 240**

**3. A box holds 24 jars. How many jars are in 4 boxes, and roughly how many is that if you round 24 to the nearest ten first?**

1. Exactly: 24 × 4 = 96.
2. Rounding 24 to 20: 20 × 4 = 80.
3. The estimate is close, so the exact answer is believable.

Answer: **96 exactly, about 80**

**4. A box holds 25 jars. How many jars are in 8 boxes, and roughly how many is that if you round 25 to the nearest ten first?**

1. Exactly: 25 × 8 = 200.
2. Rounding 25 to 30: 30 × 8 = 240.
3. The estimate is close, so the exact answer is believable.

Answer: **200 exactly, about 240**

**5. 210 pencils are shared equally between 6 classes. One class gives 7 away. How many does that class have left?**

1. 210 ÷ 6 = 35 each.
2. 35 − 7 = 28.

Answer: **28**

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SAMPLE PAGES

# You have read a few pages. The pack is longer.

What you are holding is a short sample, taken from different parts of the pack so that you can see how a week is planned and what a child is actually asked to do, before you decide.

The complete pack, and the rest of the academic materials, are on our website: schemes of work for a parent teaching at home, and practice packs for the skills children get stuck on.

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Islamic and Academic Education

**Members of the homeschool community do not buy these.** If you have joined the community, the pack for the term you are working on is given to you at no cost.

Our Islamic Education classes are free. These packs are part of what pays the teachers who teach them.