Area of Composite Shapes

Apply the skill to decisions and designs

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Split a region into nonoverlapping parts. Add attached parts and subtract missing parts. A 5 by 3 rectangle with a triangle of base 5 and perpendicular height 2 has area $15 + 5 = 20$ square units.

Worked example

A 5 by 4 rectangle has a 2 by 1 notch. Find area.

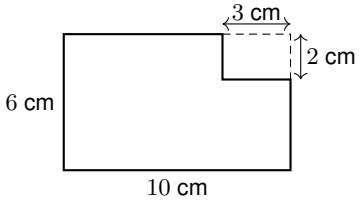
1. Whole rectangle: $5(4) = 20$.
2. Notch: $2(1) = 2$.
3. Remaining area: $20 - 2 = 18$.

Answer: 18 square units.

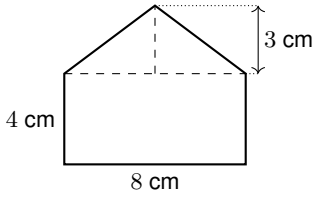
Practice Problems

Show your thinking.

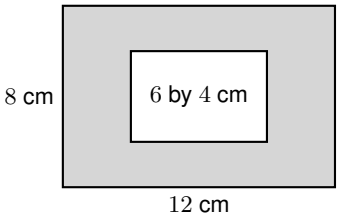
1. A 10 by 6 cm rectangle has a 3 by 2 cm corner removed. A kit covers 53 cm^2. Find the panel area and any shortage.



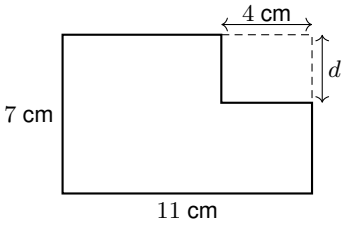
2. A roof triangle of base 8 cm and height 3 cm sits on a 8 by 4 cm rectangle. Find the total area and the area added by the roof.



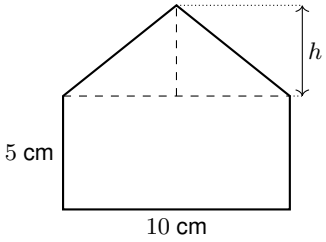
3. A 12 by 8 cm rectangular frame has a 6 by 4 cm hole. If the hole height increases to 5 cm, find the new area and how much material is saved.



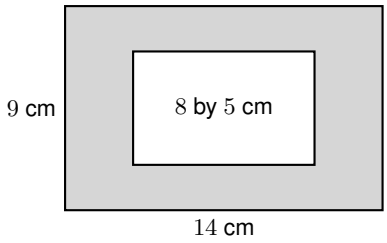
4. Cut a 4 cm wide notch in a 11 by 7 cm panel. At least 65 cm^2 must remain. Find the greatest whole-cm notch depth.



5. A 10 by 5 cm rectangle supports a triangular roof of base 10 cm. Choose the lowest roof height from $3, 4, 5$ cm that gives at least 70 cm^2 total.



6. A centered 8 by 5 cm hole is cut from a 14 by 9 cm frame. Each border must be at least 2.25 cm wide. Does it qualify?



Answer Key

1. 54 cm^2. Short 1 cm^2.
2. 44 cm^2. Roof adds 12 cm^2.
3. New area 66 cm^2; saves 6 cm^2.
4. 3 cm.
5. Roof height 4 cm.
6. Left/right 3 cm; top/bottom 2 cm. No; top and bottom are too narrow.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Outer rectangle: $10(6) = 60$ cm^2.
2. Removed rectangle: $3(2) = 6$ cm^2.
3. Subtract the removed area: $60 - 6 = 54$ cm^2.
4. The shortage is $54 - (53) = 1$ cm^2.

Problem 2

1. Outer rectangle: $8(4) = 32$ cm^2.
2. Added triangle: $(8)(3)/2 = 12$ cm^2.
3. Add: $32 + 12 = 44$ cm^2.

Problem 3

1. Outer rectangle: $12(8) = 96$ cm^2.
2. Removed rectangle: $6(4) = 24$ cm^2.
3. Subtract the removed area: $96 - 24 = 72$ cm^2.
4. New area: $96 - 6(5) = 66$ cm^2. Savings: $72 - 66 = 6$ cm^2.

Problem 4

1. Whole area: $11(7) = 77$ cm^2.
2. At most $77 - 65 = 12$ cm^2 may be removed.
3. The depth must satisfy $4d \le 12$, so $d \le 3$ cm.
4. A 4 cm depth leaves $77 - 4(4) = 61$ cm^2, below 65 cm^2.

Problem 5

1. The rectangle accounts for $10(5) = 50$ cm^2.
2. The roof must supply at least $70 - 50 = 20$ cm^2.
3. At the target area, $h = 2(20)/10 = 4$ cm.
4. At 3 cm the total is 65 cm^2, too small; 4 cm reaches 70 cm^2.

Problem 6

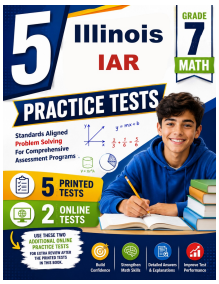
1. Split the remaining width equally: $(14 - 8)/2 = 3$ cm on each side.
2. Split the remaining height equally: $(9 - 5)/2 = 2$ cm at top and bottom.
3. Top and bottom are 2 cm each, short by $2.25 - 2 = 0.25$ cm.

TESTINAR

Keep Building Grade 7 Math Skills

Choose the practice book matched to your state assessment and turn worksheet practice into a complete test-prep plan.

All Grade 7 books



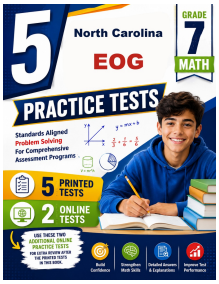
ILLINOIS IAR

5 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 5 printable practice tests.

Printable eBook • Instant PDF access

View eBook



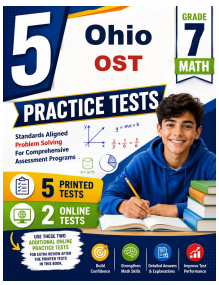
NORTH CAROLINA EOG

5 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 5 printable practice tests.

Printable eBook • Instant PDF access

View eBook



OHIO OST

5 Full-Length Math Practice Tests

Build Grade 7 accuracy, confidence, and test stamina with 5 printable practice tests.

Printable eBook • Instant PDF access

View eBook

Need a different state?
Testinar has Grade 7 math practice books for state assessments across the country.

TESTINAR.COM/GRADES/7