Geometry

TESTS MASTERY OF ALGEBRA 1 · 20 ITEMS · 60-75 MINUTES · CALCULATOR ON SECTION B ONLY

PMC Geometry opens with logic, so this diagnostic checks two things at once: whether the algebra the course leans on is secure, and whether a student can already reason from given statements rather than from appearance. Items about diagrams deliberately test what may NOT be assumed.

BEFORE YOU BEGIN

No calculator unless a question says otherwise. Show your working - the method tells us more than the answer.
Leave a question blank rather than guessing. A blank tells us it is unfamiliar; a wrong answer tells us what is believed.
Work alone. Nobody should explain the mathematics or suggest a method.
Stop and resume later if you tire. This is a picture of understanding, not a race.

SECTION A Multiple choice

10 items

Choose one answer. If you are unsure, leave it blank rather than guessing.

01 Solve for x: 3x - 7 = 2x + 5

A) 12
B) -2
C) 2
D) -12

02 Two angles are supplementary. One is 65 degrees. The other is

A) 115
B) 25
C) 35
D) 295

03 If a triangle has sides 3, 4 and 5, it is

A) Right-angled
B) Equilateral
C) Obtuse
D) Impossible

04 The contrapositive of 'If it is a square, then it has four sides' is

A) If it does not have four sides, then it is not a square

B) If it has four sides, then it is a square

C) If it is not a square, then it does not have four sides

D) A square has four sides

05 In a diagram, two segments LOOK equal but are not marked equal. You may

A) Not assume they are equal

B) Assume they are equal

C) Measure with a ruler

D) Assume the diagram is wrong

06 The area of a circle with radius 5 is

A) 25pi

B) 10pi

C) 5pi

D) 50pi

07 Which transformation preserves both size and shape but reverses orientation?

A) Reflection

B) Dilation

C) Rotation

D) Translation

08 The sum of the interior angles of a pentagon is

A) 540

B) 360

C) 720

D) 450

09 Two triangles have all three pairs of angles equal. They must be

A) Similar

B) Congruent

C) Both

D) Neither

10 The distance between (1,2) and (4,6) is

A) 5

B) 7

C) 25

D) 3

SECTION B Student solving

6 items

Show your working. We are reading the method, not only the answer.

11 Find x, and state the reason for each step: angles (2x + 10) and (3x - 5) are vertical angles.

12 A ladder 13 m long leans against a wall with its foot 5 m from the base. How high does it reach? Draw a diagram first.

13 Write the converse of: 'If two angles are vertical, then they are congruent.' Is the converse true? Explain.

14 A rectangle has area 48 sq cm and length 12 cm. Find its perimeter. Show your reasoning.

15 Triangle ABC has vertices A(0,0), B(4,0), C(4,3). Find its area and its perimeter.

16 Explain the difference between similar and congruent figures. Give an example of each.

SECTION C Error analysis

4 items

Each shows work containing a mistake. Find the FIRST incorrect step, say what the student believed, and give the correct answer.

17 Find the first incorrect step and correct it.

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Circle radius 6.
Area = 2 x pi x 6
Area = 12pi
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18 Explain the flaw in this proof step.

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Given: triangles ABC and DEF
with angle A = angle D.
Student: therefore the triangles
are congruent.
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19 Find the error in this reasoning about the diagram.

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The diagram shows a quadrilateral
whose sides look parallel.
Student: it is a parallelogram,
so opposite angles are equal.
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20 Find the first incorrect step and give the correct answer.

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Right triangle, legs 6 and 8.
Hypotenuse: 6 + 8 = 14
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What happens next

Bring this completed sheet to your consultation. A tutor reads it alongside a short conversation with the student and any school work you choose to share, then recommends a level. No placement is ever decided by a score on its own, and no student is placed without a tutor's approval.