AN AMESA WORKSHOP

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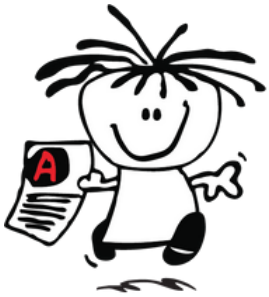
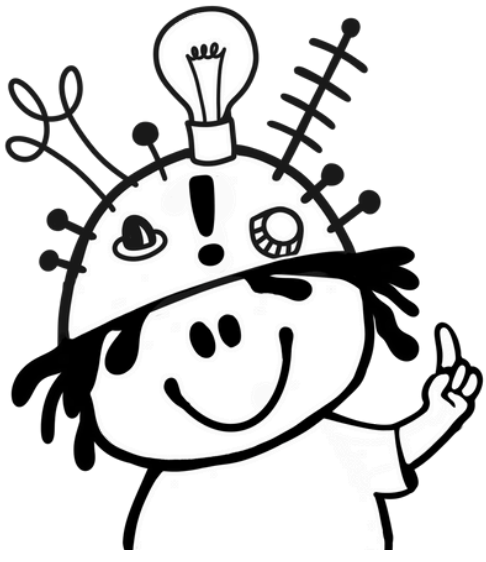


THE ANSWER SERIES *Your Key to Exam Success*

Problem Solving in Gr 8 & 9



For solutions

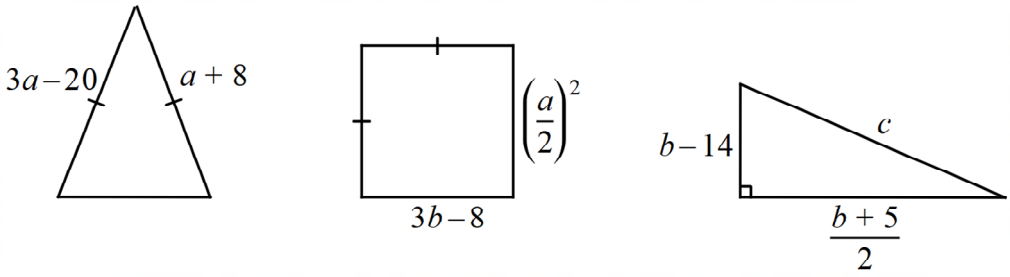
SCAN ME

Problem Solving in Grades 8 and 9

Syllabus Based Problem Solving

1. Two positive numbers a and b, with $a > b$, are such that twice their sum is equal to five times their difference. Determine the value of $\frac{a}{b}$.

2. An isosceles triangle, a square, and a right-angled triangle are drawn, not to scale.



Determine the value of c.

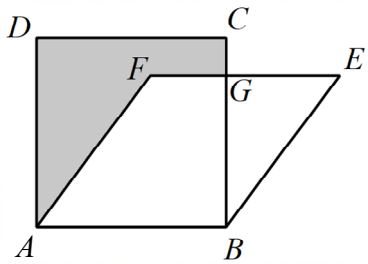
3. Fifty-four cubes of side length 1 cm are stacked to form a rectangular prism. Determine the height of the prism if the perimeter of the base is 20 cm.

4. Given:

$$x(y+2)=\frac{4}{5} \qquad y(x+2)=\frac{15}{8} \qquad xy=\frac{9}{10}$$

Determine the value of $(x+2)(y+2)$.

5. In the diagram, the area of square $ABCD$ is 25 cm^2, and the area of rhombus $ABEF$ is 20 cm^2.

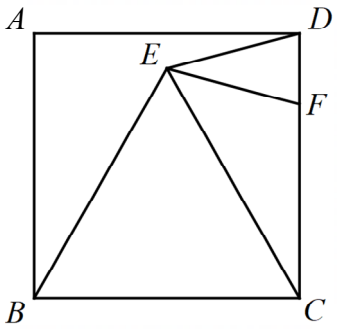


Determine the shaded area.

6. Two two-digit numbers have a product of 4 675. Determine the sum of the two numbers.

7. The difference between each interior angle and each exterior angle in a regular polygon is 140°. Determine the number of sides in the polygon.

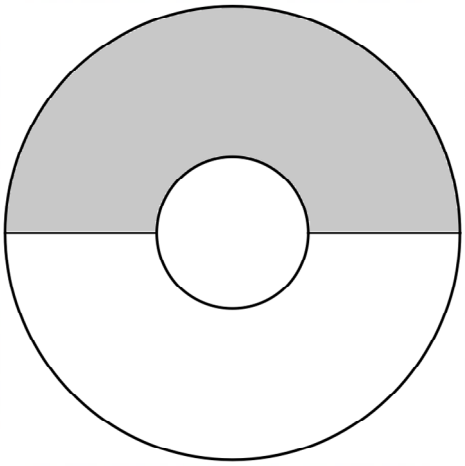
8. In the diagram $ABCD$ is a square. E is a point inside the square such that ΔEBC is equilateral. F is a point on CD such that $ED = EF$.



Determine the size of $F\hat{E}C$.

9. A number of children sign up to go on an outing. The ratio of boys to girls is 1 : 4. At the last minute 2 girls pull out and 7 more boys sign up to go. The new ratio of boys to girls is 2 : 3. Determine the total number of children who went on the outing.

10. Two concentric circles are drawn with the radius of the big circle three times the radius of the small circle. The top half of the larger circle is shaded grey.



Determine the ratio of the area of the shaded region to the area of the small circle.

Non-Syllabus Based Problem Solving

1. The product of five different integers is 12. Determine the smallest integer.

2. *ABCD* is a square which has been divided into four regions – a square of area 36 cm^2, another square of area 9 cm^2, and two identical rectangles. Determine the area of *ABCD*.

3. When writing down the natural numbers from 1 to N, I use the digit 2 twenty times, and the digit 3 nineteen times. Write down the value of N.

4. There are pigs and chickens in a yard. Altogether there are 25 heads and 60 legs. Determine the number of pigs in the yard.

5. A, B and C stand for different digits in the sum

$$\begin{array}{r} A\,B\,C \\ A\,B\,C \\ +\,A\,B\,C \\ \hline C\,C\,C \end{array}$$

Determine the value of A + B + C.

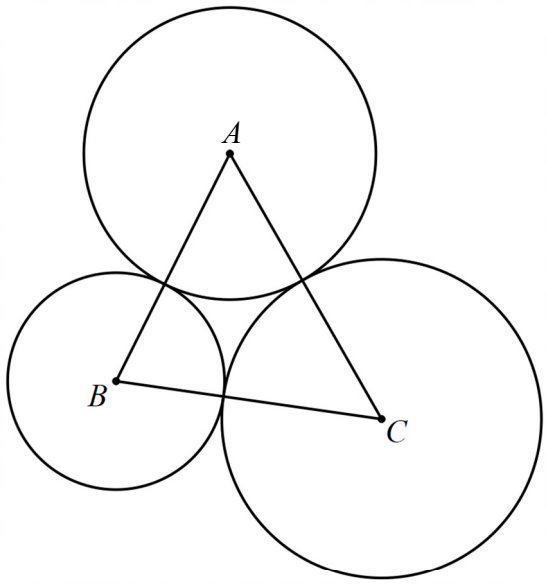
6. A woman had her first child when she was 25 years old. She had her second child exactly three years later, and her third child exactly three years after the second child. Her age is now equal to the sum of her three children's ages. Determine the age of the youngest child.

7. You want to buy caps for an interschools athletics meeting. The manufacturer says the cost will be R20 per cap, or R100 for 6 caps. Determine the minimum amount you can pay for 2 025 caps.

8. A group of six friends met up. Angie shook hands with exactly one person, Bonnie shook hands with two people, Clive shook hands with three people, Dene with four people, and Eric with five people. How many hands did Frank shake?

9. The angles of a triangle are all natural numbers. One angle is 30° more than the average of the other two angles. Determine the size of the largest possible angle.

10. Three circles are drawn touching each other. The centres of the circles form ΔABC, where $AB = 16$ units, $BC = 13$ units, and $AC = 20$ units. The diagram is not drawn to scale.



Determine the size of the smallest radius.