LKPF F2-WS6-Pythagoras Theorem

F.2 Mathematics Worksheet 6
Ch.6 Square Roots and Pythagoras' Theorem
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1. Find the values of the following expressions. (Give your answers correct to 3 significant figures.)
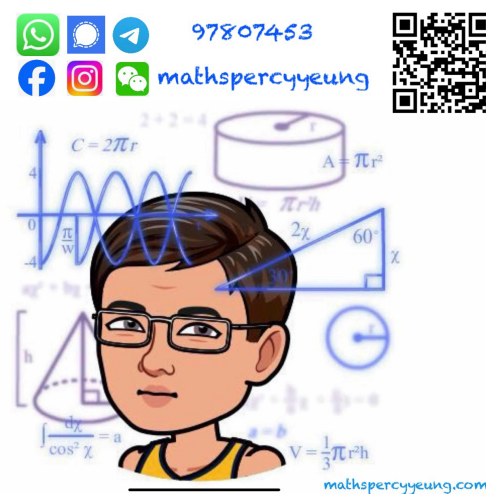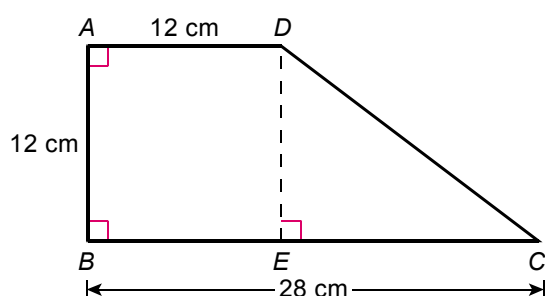
(a) $\sqrt{9^2 + 13^2}$ = _____

(b) $\sqrt{29^2 - 10^2}$ = _____

(c) $8 + \sqrt{40^2 - 25^2}$ = _____

(d) $\sqrt{35^2 - 24^2} - 13$ = _____

2. In the figure, find the perimeter of trapezium $ABCD$.
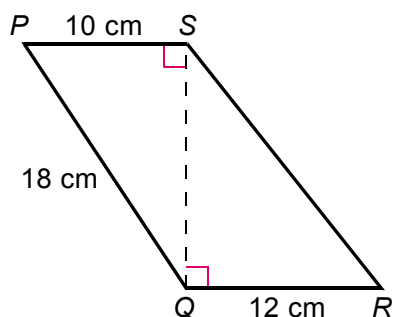
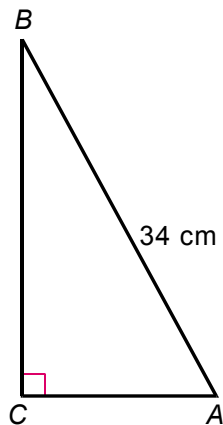**3.** In the figure, $PQ = 18$ cm, $QR = 12$ cm and $PS = 10$ cm .
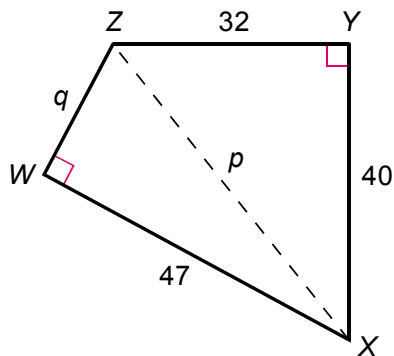   **(a)** Find the length of QS.
   (b) Find the length of RS.
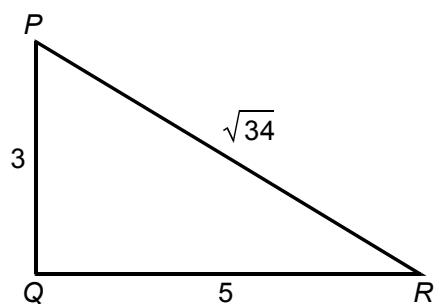   (Give your answers correct to 3 significant figures.)

4. In the figure, $AB = 34$ cm and $AC : BC = 8 : 15$. Find the length of BC.

B

34 cm

C   A

5. In the figure, $WX = 47$, $XY = 40$ and $YZ = 32$.
   (a) Find the value of p.
   (b) Find the value of q.
   (c) Find the area of quadrilateral $WXYZ$.
   (Give your answers correct to 3 significant figures.)

Z   32   Y

q

p

W   40

47

X

6. (a) Prove that $\angle PQR$ in the figure is a right angle.

  (b) Find the area of $\triangle PQR$.


7. In the figure, AC and BD intersect at E.

  (a) Prove that $AC \perp BD$.

  (b) Find the lengths of BC and DC.

  (c) Is $\triangle BCD$ a right-angled triangle?   Explain briefly.
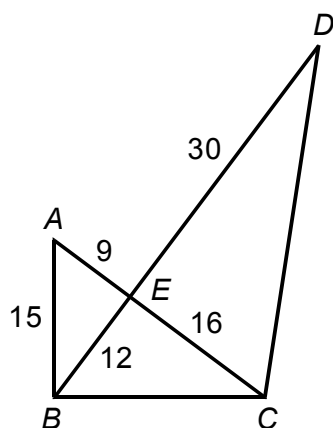
8. Oscar walked due west from point A at a speed of 60 m / min.   After 3 minutes, he reached point B.   A tree is 425 m and 385 m away from points A and B respectively.
   (a) Prove that point B is due north of the tree.
   (b) If Oscar continued to walk due west from point B at the same speed for 5 minutes, he reached point C finally. Find the distance between point C and the tree. (Give your answer correct to 3 significant figures.)
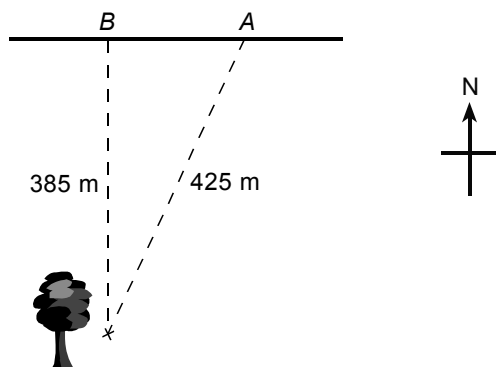
9. Find the area of the polygon in the figure. (Give your answer correct to 3 significant figures.)

4 cm

3 cm

1 cm

2 cm
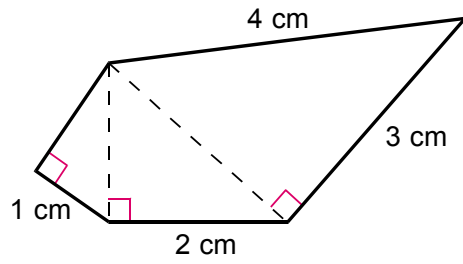
10. Simplify the following without using a calculator.

(a) $\sqrt{28}$

(b) $\sqrt{264}$

(c) $\sqrt{\dfrac{3}{64}}$

(d) $\sqrt{\dfrac{216}{50}}$

(e) $\sqrt{6} \times \sqrt{54}$

(f) $\dfrac{\sqrt{180}}{\sqrt{15}}$

(g) $\sqrt{15} \times \sqrt{20} \times \sqrt{75}$

(h) $\dfrac{\sqrt{40} \times \sqrt{125}}{\sqrt{18}}$

11. Simplify the following without using a calculator.

(a) $\dfrac{\sqrt{21} \times \sqrt{70}}{\sqrt{54}}$

(b) $\dfrac{\sqrt{315}}{\sqrt{12} \times \sqrt{105}}$

12. Rationalize the denominators of the following.

(a) $\dfrac{\sqrt{15}}{\sqrt{2}}$

(b) $\dfrac{3\sqrt{3}}{\sqrt{54}}$

(c) $\sqrt{\dfrac{64}{7}}$

(d) $\sqrt{\dfrac{135}{72}}$

13. Simplify the following without using a calculator.

    (a) $4\sqrt{3}+13\sqrt{3}$ **(b)** $\sqrt{10}+\dfrac{3\sqrt{10}}{2}$

    (c) $3\sqrt{12}+2\sqrt{27}$ **(d)** $4\sqrt{15}+\sqrt{60}$

    (e) $\sqrt{128}-\sqrt{50}$ **(f)** $8\sqrt{45}-3\sqrt{20}$