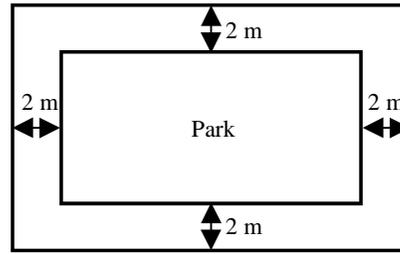# ALGEBRA REVIEW

1 The length of a rectangular park is 2 times greater than its width.

The park is framed by sidewalk that is 2 m wide, as shown on the right.

The area of the sidewalk alone is 136 m^2.

What is the area of the park without the surrounding sidewalk? Show your work.

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┌─────────────────────────────┐
│          ↕ 2 m              │
│   ┌─────────────────────┐   │
│ 2 m│                    │2 m │
│ ↔ │       Park          │ ↔  │
│   └─────────────────────┘   │
│          ↕ 2 m              │
└─────────────────────────────┘
```

2 A rectangle has a length of $(x + 3)$ cm and a width of $(2x - 1)$ cm. A new rectangle is formed by taking 3 cm from each dimension. Find the difference between the areas of the two rectangles. Show your work.

3 Simplify the following :

a) $7x^2 + 2x - (6x^2 - 2x) + x =$

b) $2ab(5a^2b - 2ab) =$
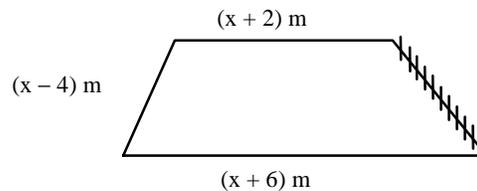
c) $(8x^2y^2 - 6xy^2) \div (3xy) =$

d) $\dfrac{12a^4 - 6a^2 + 9a}{3a} =$

e) $(3x - 4)^2 =$

4 Alexander's plot of land is in the shape of a trapezoid whose 3 sides measure $(x + 6)$ m, $(x - 4)$ m, and $(x + 2)$ m respectively.

The perimeter of the land is $(5x + 7)$ m.

How much will it cost to install a fence on the side whose length is not given if the fencing material costs $(x - 5)$ per metre?

$(x + 2)$ m

$(x - 4)$ m

$(x + 6)$ m

5 The adjacent figure is made up of a rectangle and an equilateral triangle.

The area of the rectangle, whose width is x, is represented by the expression $6x^2 + 5x$.

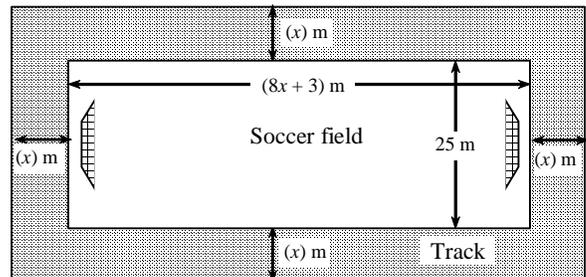What is the simplest algebraic expression that can be used to represent the perimeter of the triangle? Show your work.

$6x^2 + 5x$

x
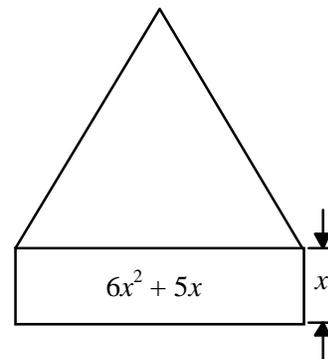
6 Oliver and Paula are training for a race. They run on the track around the school soccer field every day. The soccer field is 25 metres wide and $(8x + 3)$ metres long. The width of the running track is (x) metres. Oliver runs along the outside edge of the track and Paula keeps to the inside edge of the track.

After one full lap around the track, Oliver has run 32 metres more than Paula.

What is the length of the soccer field, in metres?

Show all your work.

(x) m

$(8x + 3)$ m

Soccer field

25 m

(x) m

(x) m

(x) m

Track

7 The dining room and the hallway of a hotel have the same areas, but their perimeters are different. The algebraic expression for some of the dimensions are given in the diagram below.

What is the difference between the perimeter of the hallway and the perimeter of the room?

Show all your work.

DINING ROOM

$3x$

$x + 5$

HALLWAY

x